APPENDIX A

707/707A Decommissioning BIO

Technical Safety Requirements (TSRs)

(U, NU)

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LIST OF TERMS

Acronyms, Abbreviations, and Symbols

AB	Authorization Basis
AC	Administrative Control
ac	Alternating Current
CAAS	Criticality Accident Alarm System
CCA	Configuration Control Authority
COOP	Conduct of Operations Procedure
dc	Direct Current
DCW	Domestic Cold Water
DF	Design Feature
DOE	Department of Energy
DOE-RFFO	Department of Energy - Rocky Flats Field Office
FDC	Fire Dispatch Center
FPE	Fire Protection Engineering
FHA	Fire Hazards Analysis
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilating and Air Conditioning
in. w.g.	inches water gauge
IWCP	Integrated Work Control Program
LCO	Limiting Condition For Operation
LLW	Low Level Waste
LPF	Leak Path Factor
LS/DW	Life Safety/Disaster Warning
MAR	Material at Risk
NCSM	Nuclear Criticality Safety Manual
NFPA	National Fire Protection Association
PIV	Post Indicating Valve
psig	pounds per square inch gauge
SAR	Safety Analysis Report
SCO	Surface Contaminated Object
SIO	Signal Input/Output
SMP	Safety Management Program
SWB	Standard Waste Boxes
SOE	Stationary Operating Engineer
SR	Surveillance Requirement
SSCs	Structures, Systems, and Components
TRU	Transuranic
TSR	Technical Safety Requirements
UPS	Uninterruptible Power Supply
USQ	Unreviewed Safety Question
USQD	Unreviewed Safety Question Determination
WG Pu	Weapons Grade Plutonium

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TECHNICAL SAFETY REQUIREMENTS (TSRs)

1 USE AND APPLICATION

Compliance with Technical Safety Requirements (TSRs) as written is mandatory.

1.1 Definitions

NOTE
Defined terms in this section appear in capitalized type and are applicable throughout the TSRs (i.e., LCOs, Bases, and ACs).

Term	Definition
ACCEPTANCE CRITERIA	A reading, indication, or measurement that demonstrates that the surveilled function meets the applicable TSR.
AC NONCOMPLIANCE	A failure to meet an ADMINISTRATIVE CONTROL resulting in an unplanned entry into AC CONDITION(s) and associated REQUIRED ACTIONS.
ADMINISTRATIVE CONTROLS (ACs)	Specific attributes of programs identified within the safety analysis or relied upon to protect assumptions of the analysis.
AFFECTED AREA	The portion of the 707/707A COMPLEX that is affected by an activity, condition, or deficiency.
ATMOSPHERIC REFERENCE	Ambient air pressure external to the building.
707/707A COMPLEX	The facilities and areas defined in Section 2.3, which are included in the safety analysis and subject to applicable controls.
COMPLETION TIME	The period allowed to accomplish a REQUIRED ACTION. The COMPLETION TIME starts whenever a situation (*e.g.*, equipment not OPERABLE or variable not within limits) is DISCOVERED that requires entering the REQUIRED ACTION for a given CONDITION. REQUIRED ACTIONS shall be performed before the specified COMPLETION TIME expires.

1 USE AND APPLICATION

1.1 Definitions (continued)

CONDITION	Configuration and status of the facility related to compliance with the TSRs for which REQUIRED ACTIONS must be performed within a specified COMPLETION TIME.
DEFENSE-IN-DEPTH	Engineered features, administrative programs, or program elements that are not used in analysis to reduce frequency or consequences but add additional levels of protection.
DESIGN FEATURES (DF)	Passive systems, structures, and components that are used in the analysis to reduce frequency or consequence or provide a DEFENSE-IN-DEPTH function, and are not specifically required to have an LCO.
DISCOVERY/ DISCOVERED	For SURVEILLANCE REQUIREMENTS (SRs), the point in time when the CCA, Facility/WAT Manager, or Surveillance Review Designee is notified of, or reviews, information showing that a SR was not met. For TSR compliance, the point in time when the CCA or Facility Manager makes the determination that a TSR is not met or that an unplanned CONDITION has been entered and REQUIRED ACTIONS must be implemented. Note: The definitions listed above apply to TSR compliance and should not be confused with AB inadequacy discovery issues.
IMMEDIATELY	As soon as practicable, taking into account all safety considerations and not to exceed 1 hour.
LIMITING CONDITION FOR OPERATION (LCO)	The lowest functional capability or performance level of SAFETY Structure, Systems, and Components (SSCs) required for safe operation of the facility.
OPERABLE – OPERABILITY	A SAFETY SSC is OPERABLE when it is capable of performing its safety function(s) on demand. The SRs and associated Bases for each LCO specify what requirements must be met for a system to be considered operable.

1 USE AND APPLICATION

1.1 Definitions (continued)

OPERATIONALLY CLEAN	The point where as much contaminated process equipment as reasonable has been dismantled, packaged as waste, and removed from an area. OPERATIONALLY CLEAN is used as the point where some TSR requirements may be discontinued (See Administrative Control 5.5).
OUT-OF-SERVICE	Equipment formally designated as not available to perform its required safety function.
OUT-OF-TOLERANCE	A CONDITION that exists upon failure to meet LCOs or SRs.
REQUIRED ACTION	The mandatory response when an LCO or AC CONDITION is entered.
SAFETY-CLASS SSCs	Structures, Systems, or Components, including portions of process systems, whose preventive or mitigative function is necessary to limit radioactive hazardous material exposure to the public, as determined from safety analyses. SAFETY-CLASS SSC designations based on public safety include those SSCs necessary to keep dose consequences to the public below 5.0 rem.
SAFETY-SIGNIFICANT SSCs	Structures, systems, or components which are not designated as SAFETY-CLASS SSCs, but whose preventive or mitigative function is a major contributor to DEFENSE-IN-DEPTH and/or worker safety as determined from safety analysis. SAFETY-SIGNIFICANT SSC designations based on DEFENSE-IN-DEPTH include those SSCs necessary to reduce dose consequences to the public and/or collocated worker to Risk Class III or IV. SAFETY-SIGNIFICANT SSC designations based on immediate worker safety are limited to those SSCs whose failure is qualitatively estimated to result in an acute worker fatality or serious injuries to workers. Serious injuries, as used in this definition, refer to medical treatment for immediate life-threatening or permanently disabling injuries (e.g., loss of eye, loss of limb) from other than standard industrial hazards. It specifically excludes potential latent effects (e.g., potential carcinogenic effects of radiological exposure or uptake).

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1 USE AND APPLICATION

1.1 Definitions (continued)

SAFETY SSCs	The set of SAFETY-CLASS SSCs and SAFETY-SIGNIFICANT SSCs.
SUPPORT SYSTEM	Systems that are essential for a SAFETY SSC to meet LCO requirements or to meet assumptions in the accident analysis. SUPPORT SYSTEMS are identified in the Bases for the LCO. SUPPORT SYSTEMS are tested and inspected in accordance with contractor procedures.
SURVEILLANCE REQUIREMENTS (SRs)	Testing, calibration, or inspection requirements to ensure that the LCO or AC required safety function is maintained and/or that operations are within the specified criteria of the LCOs and ACs.
SUSPEND OPERATIONS	A formal suspension of the following activities inside the AFFECTED AREA: • Hazardous Material Handling (See Chapter 4, Section 4.3) • Radioactive Waste Generation and Handling (see Chapter 4, Section 4.4) • Decommissioning activities (see Chapter 4, Section 4.5). The following activities do not need to be suspended: • Activities directly involved in placing or maintaining the 707/707A COMPLEX in a safe configuration or in compliance with applicable regulations; • Activities directly involved in restoring the safety function associated with the suspension; • Activities directly involved in restoring the safety function associated with other LCO OUT-OF-TOLERANCES; • Activities directly involved in correcting AC NONCOMPLIANCES; • Administrative Operations (see Chapter 4, Section 4.1). and • General Facility Operations (see Chapter 4, Section 4.2);

1 USE AND APPLICATION

1.1 Definitions (continued)

TECHNICAL SAFETY REQUIREMENTS (TSR)	Those requirements that define the conditions, safe boundaries, and the management or administrative controls necessary to ensure the safe operation of a nuclear facility and to reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials or from radiation exposures due to inadvertent criticality. TSRs consist of operating limits, SRs, ADMINISTRATIVE CONTROLS, DESIGN FEATURES use and application instructions, and the bases thereof.
VIOLATION	A TSR VIOLATION occurs when the facility: a. fails to take REQUIRED ACTIONS within the specified COMPLETION TIME after failing to meet a TSR or TSR SR; b. fails to perform a TSR SR within the specified frequency including the "grace period" (violates SR 4.0.2); c. fails to SUSPEND OPERATIONS per TSR 3.0.3 when REQUIRED ACTIONS cannot or will not be met or are not provided; or d. determines that continued recurrence of an AC NONCOMPLIANCE from TSR 3.0.4 represents a safety significant trend. A VIOLATION is considered historical if the condition was corrected prior to DISCOVERY.

1 USE AND APPLICATION

1.2 Logical Connectors

Logic terms (**AND, OR**) may be used in the CONDITIONS, REQUIRED ACTIONS, or the COMPLETION TIME section of TSR REQUIRED ACTION statements or in the SRs or frequency sections of the TSR SURVEILLANCE statements. The following definitions and format are applicable to the use of logic terms throughout the TSRs.

> ***NOTE***
> Defined terms in this section appear in CAPITALIZED, **bolded**, and underlined type throughout the TSRs.

LOGIC TERMS / DEFINITIONS

Terms	Definitions
AND	Used to connect two or more sets of criteria that must both (all) be satisfied for a given logical decision.
OR	Used to denote alternate combinations or CONDITIONS, meaning either one or the other criterion will satisfy a given logical decision.

1 USE AND APPLICATION

1.2 Logical Connectors (continued)

The formats for the CONDITION level(s) of logic are illustrated in the following examples.

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. For statements containing a **SINGLE LEVEL.**	The connector is *left justified to the column* and the criteria are *single* numbered. A.1 The action... **OR** A.2 The action...	Note: This example demonstrates that for CONDITION A, either REQUIRED ACTION A.1 or REQUIRED ACTION A.2 must be completed. This is because the logical connector **OR** is used.
B. For statements containing **TWO LEVELS.**	For the 1st level - The connector is *left justified to the column* and the criteria are *single* numbered. For the 2nd level - The connector is *indented once to the right* and the criteria are *double numbered.* B.1 The action... **OR** B.2.1 The action... **AND** B.2.2 The action...	Note: This example demonstrates that for CONDITION B, either REQUIRED ACTION B.1 or REQUIRED ACTION B.2.1 must be completed. If REQUIRED ACTION B.2.1 is chosen, an additional requirement, indicated by the indented logical connector **AND**, is imposed. This additional requirement is met by performing REQUIRED ACTION B.2.2.

1 USE AND APPLICATION

1.2 Logical Connectors (continued)

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. For statements containing **THREE LEVELS**:	For the 1st level - The connector is *left justified to the column* and the criteria are *single* numbered. For the 2nd level - The connector is *indented once to the right* and the criteria are *double numbered.* For the 3rd level - The connector is *indented twice to the right* and the criteria are *triple numbered.* C.1 The ACTION.... **OR** C.2.1 The ACTION.... **AND** C.2.2.1 The ACTION.... **OR** C.2.2.2 The ACTION....	*Note:* This example demonstrates that for CONDITION C, either REQUIRED ACTION C.1 or REQUIRED ACTION C.2.1 must be completed. If C.2.1 is chosen, an additional requirement, indicated by the indented logical connector **AND**, is imposed. This additional requirement is met by choosing C.2.2.1 or C.2.2.2. The indented position of the logical connector **OR** indicates that C.2.2.1 and C.2.2.2 are alternate and equal choices, one of which shall be performed.

1 USE AND APPLICATION

1.3 Frequency Notation

The frequency notations used in SRs and elsewhere in this document are defined as follows:

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Notation	**Nominal Frequency**	**Interval Not to Exceed** (grace period)
4 Hours	4 Hours	5 Hours
Daily	24 Hours	30 Hours
Weekly	7 Days	9 Days
Monthly	30 Days	37 Days
Annually	12 Months	15 Months
18 months	18 Months	22 Months

Use of the grace period does not extend the due date for the next surveillance period.

A surveillance is considered complete when it has been reviewed by the CCA or Surveillance Review Designee. The Surveillance Review Designee is another person formally designated to review the surveillance when there is no CCA on duty.

2 SAFETY LIMITS AND LIMITING CONTROL SETTINGS

There are no Safety Limits or Limiting Control Settings for the 707/707A COMPLEX.

3/4 OPERATING LIMITS, SURVEILLANCE REQUIREMENTS, AND BASES

3.0 General Application of TSRs

TSR 3.0.1 **TSRs Shall Be Met.**

LCOs and ACs shall be met during the specified operating configurations and in the specified areas/locations in the applicability statements, except as provided in TSR 3.0.2.

TSR 3.0.2 **TSR REQUIRED ACTION Shall Be Met.**

Upon DISCOVERY that a TSR is not being met or that an unplanned CONDITION has been entered, the associated REQUIRED ACTION(S) shall be implemented. If the TSR is restored before expiration of the specified COMPLETION TIME(S), completion of the REQUIRED ACTION(S) is not required.

TSR 3.0.3 **TSR REQUIRED ACTION Cannot Be Met or Is Not Provided.**

When an LCO or AC is not met, and the associated REQUIRED ACTION(S) cannot be met, the facility shall SUSPEND OPERATIONS in AFFECTED AREAS within the time prescribed by the REQUIRED ACTION. When REQUIRED ACTIONS are not provided, the facility shall SUSPEND OPERATIONS in the AFFECTED AREA within four hours. Actions taken to SUSPEND OPERATIONS shall be initiated upon the determination that the specified REQUIRED ACTION(S) cannot or will not be met.

Completion of SUSPEND OPERATIONS in the AFFECTED AREA(S) within the specified COMPLETION TIME constitutes taking the REQUIRED ACTION for the actual CONDITION and no VIOLATION is declared.

When the LCO, AC, or REQUIRED ACTION is met, completion of the TSR 3.0.3 REQUIRED ACTION is not required.

3/4 OPERATING LIMITS, SURVEILLANCE REQUIREMENTS, AND BASES

3.0 General Application of TSRs (continued)

TSR 3.0.4 Continued Recurrence of an AC NONCOMPLIANCE

AC NONCOMPLIANCES shall be tracked and trended. If an AC NONCOMPLIANCE continues to occur, indicating that corrective actions have not been effective, the following ACTIONS shall be taken:

1. Ensure that the facility is in a safe configuration;
2. Notify Department of Energy/Rocky Flats Field Office (DOE-RFFO) of the potential trend within 1 week of identification;
3. Senior facility management shall meet with DOE-RFFO senior management to determine if there is a trend, determine its safety significance, and determine if a VIOLATION exists; and
4. Implement corrective actions.

TSR 3.0.5 Response to a TSR VIOLATION.

Upon DISCOVERY of an existing VIOLATION, the following ACTIONS shall be taken:

1. Complete the appropriate REQUIRED ACTIONS and SUSPEND OPERATIONS in AFFECTED AREA(s) within four hours or the COMPLETION TIME (whichever is less);
2. Notify DOE-RFFO of the TSR VIOLATION in accordance with approved procedures; and
3. Identify and implement corrective actions and resume operations in accordance with the *Conduct of Operations Manual (COOP)* (Ref. 1).

Upon DISCOVERY of an historical VIOLATION the following actions shall be taken:

1. REQUIRED ACTIONS do not need to be entered;
2. Notify DOE-RFFO of the TSR VIOLATION in accordance with approved procedures;
3. Verify current operability status in accordance with COOP.
4. Identify and implement long-term corrective actions to prevent recurrence in accordance with COOP.

3/4 OPERATING LIMITS, SURVEILLANCE REQUIREMENTS, AND BASES

3.0 General Application of TSRs (continued)

TSR 3.0.6 **Calibration**

Installed measurement devices used to demonstrate compliance with TSRs shall be calibrated to plant design, manufacturer's specifications, and/or industry standards as determined by engineering.

If an installed indicator is found out of calibration at any time, the facility is allowed 24 hours (not to exceed the surveillance interval) from the time of discovery to calibrate or replace the indicator.

If the out-of-calibration indicator reads as expected and is within required parameters, the facility does not have to declare the TSR not met or implement REQUIRED ACTIONS during the 24-hour period.

If the out-of-calibration indicator does not read as expected or is outside required parameters, the facility shall declare the TSR not met and implement REQUIRED ACTIONS.

If the indicator is not calibrated within 24 hours from the time of discovery, the facility shall declare the TSR not met and implement REQUIRED ACTIONS.

TSR 3.0.7 **Performing SRs or other required surveillance, inspection, and testing activities:**

Surveillances, inspections, or tests (including calibrations) that require equipment to be removed from service or that cause a TSR specification to be exceeded do not constitute a failure to meet a TSR provided that individual work control documents implementing the activity describe appropriate limitations beyond which an OUT-OF-TOLERANCE CONDITION would exist.

TSR 3.0.8 **Planned OUT-OF-TOLERANCES.**

If a planned activity, other than those covered in TSR 3.0.7, will result in noncompliance with the requirements of a TSR, then the applicable REQUIRED ACTION(S) shall be implemented prior to performing the activity.

3/4 OPERATING LIMITS, SURVEILLANCE REQUIREMENTS, AND BASES

3.0 General Application of TSRs (continued)

TSR 3.0.9 **Response to an Emergency.**

Failure to initiate or complete an SR or a REQUIRED ACTION resulting from an OUT-OF-TOLERANCE CONDITION due to an emergency in the 707/707A COMPLEX does not constitute a VIOLATION of the TSR. However, upon authorized resumption of normal operations, the SR or REQUIRED ACTION must be initiated and completed as soon as practicable.

TSR 3.0.10 **Initiation of REQUIRED ACTIONS.**

REQUIRED ACTION(S) shall be initiated when a CONDITION is DISCOVERED and completed as soon as practicable within the allowed COMPLETION TIME. COMPLETION TIMES shall not be used for operational convenience.

3/4 OPERATING LIMITS, SURVEILLANCE REQUIREMENTS, AND BASES

4.0 General Application of SRs

SR 4.0.1 **SRs Shall Be Met.**

SRs shall be met during the conditions specified in the Applicability statements. SRs are met by complying with the associated ACCEPTANCE CRITERIA defined in the TSRs.

Failing an LCO-required SR results in an OUT-OF-TOLERANCE and the appropriate REQUIRED ACTIONS shall be taken.

Failing an AC-required SR results in an AC NONCOMPLIANCE and the appropriate REQUIRED ACTIONS shall be taken.

A surveillance is considered complete when the CCA or Surveillance Review Designee has reviewed it. When CCAs are not **On Duty**, the Surveillance Reviewer can review the surveillance.

SR 4.0.2 **Surveillance Frequencies.**

Each SR shall be performed within the specified interval as defined in TSR Section 1.3.

Failure to perform a surveillance within its specified frequency (including grace period) is a TSR VIOLATION, and the facility shall follow TSR 3.0.5. The REQUIRED ACTIONS to be implemented in Step 1 of TSR 3.0.5 are for the TSR associated with the missed surveillance. The notification in Step 2 of TSR 3.0.5 shall report a VIOLATION of SR 4.0.2.

SR 4.0.3 **OUT-OF-SERVICE.**

The SRs do not have to be met for systems or components that are declared OUT-OF-SERVICE. Any REQUIRED ACTIONS applicable to the systems or components that are declared OUT-OF-SERVICE shall be complied with.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1 LIMITING CONDITIONS FOR OPERATION: Confinement

3.1.1 Confinement Pressure Differential

LCO: The pressure differential shall be maintained at least 0.1 inches water gauge (in. w.g.) negative with respect to ATMOSPHERIC REFERENCE in Building 707/707A.

Applicability: This requirement is applicable at all times except as allowed in the exception statements. This requirement may be discontinued in an AFFECTED AREA when the AFFECTED AREA is OPERATIONALLY CLEAN.

Exception 1: This LCO does not apply to airlocks located inside periphery confinement barriers (e.g., Rooms 184, 184A, 185, 195, 196, and 197 (dock), Rooms 192, 176, 149, Corridor D) when the outside airlock doors are open or to rooms that do not contain significant quantities of radioactive materials (e.g., office areas of Corridor E, control room, SCO Vestibules).

Exception 2: The facility does not have to implement REQUIRED ACTIONS for transient pressure differential fluctuations lasting approximately 5 minutes (e.g., rebalancing airflows after a planned upset, momentary gauge fluctuations due to external weather, temporary upsets when airlock doors are first opened).

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. An area does not meet the pressure differential requirement. **OR** Pressure differential indication is not OPERABLE.	A.1 SUSPEND OPERATIONS in the AFFECTED AREA.	4 hours
B. Loss of remote pressure differential alarm in Control Room.	B.1 Increase the frequency of SR 4.1.1.1 in the AFFECTED AREA to every 4 hours. **AND** B.2 Restore pressure differential alarms (for existing permanently installed systems only).	4 hours 30 days

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 SURVEILLANCE REQUIREMENTS (SRs): Confinement Pressure Differential

SURVEILLANCE REQUIREMENTS(SRs)		FREQUENCY
SR 4.1.1.1	Verify that the pressure differentials in the areas required are at least 0.1 in. w.g. negative with respect to ATMOSPHERIC REFERENCE. ACCEPTANCE CRITERIA: The indicated pressure differentials in the areas required shall be at least 0.1 in. w.g. negative with respect to ATMOSPHERIC REFERENCE	Daily
SR 4.1.1.2	Verify that the low-pressure-differential alarms for the areas required are OPERABLE. ACCEPTANCE CRITERIA: A low-pressure-differential alarm is received in the Control Room when the pressure differential reaches the alarm setpoint of 0.2 in. w.g. negative with respect to atmosphere.	Annually

Note: The Bases also discuss functions or features that are not required to meet LCO 3.1.1. The list may not be all-inclusive, but it addresses functions or features that will be removed or must be disabled to support the decommissioning process. These discussions provide an understanding of how decommissioning will impact the systems and help clarify what is necessary to meet LCO 3.1.1.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential

Bases:

BACKGROUND

System Overview:
Building 707/707A was designed to confine radioactive material through a series of zones (or confinement areas) that are separated by physical barriers (e.g., gloveboxes for Zone I, walls for Zone II) and have air flow inward toward areas of higher contamination. The cascading air flow is sustained by controlling the amount of air entering or leaving each zone to produce increasingly negative pressures toward areas of potentially higher contamination.

LCO 3.1.1 only applies to secondary (i.e., periphery) confinement pressure differential requirements. Primary confinement of radioactive material is controlled by the Radiological Protection Program because a large part of decommissioning activities involve dismantling Zone I/IA enclosures such as gloveboxes and tanks. Descriptions of the Heating, Ventilating and Air Conditioning (HVAC) Systems (at the time this document was prepared) that maintain pressure differentials in Building 707/707A can be found in Chapter 2.

Impact of Decommissioning:
As part of decommissioning, all of the equipment and systems that maintain the pressure differentials must ultimately be shut down, dismantled, and packaged as waste. System configurations will change significantly throughout the project. Therefore, LCO 3.1.1 was written at a functional level rather than for specific hardware.

APPLICATION TO SAFETY ANALYSIS

System Classification:
The accident analyses credits "confinement" with reducing the consequences of accidents to co-located workers to Risk Class III. Therefore, confinement pressure differential is considered a SAFETY-SIGNIFICANT SSC.

(continued)

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential Bases: (continued)

APPLICATION TO SAFETY ANALYSIS (continued)

Applicable Accident Scenarios:
"Confinement" is credited or selected as DEFENSE-IN-DEPTH for accidents involving gloveboxes or other components in component staging areas, size reduction areas, and waste container staging areas.

To account for the reduction in reliability associated with modifications and temporary equipment required to dismantle HVAC systems, the accident analysis considers HVAC systems prone to upsets during decommissioning and evaluates losses of Zone I pressure differentials and pressurization of Zone II areas. Use of non-quality-required parts (e.g., in-house fabricated flanges and filter housings) and temporary modifications to HVAC systems (e.g., installing High Efficiency Particulate Air (HEPA) filters on ductwork, removing sections of ductwork, using air movers) do not affect the reliability/unavailability assumptions in the accident analysis.

Safety Function:
The accident analysis considers "confinement" to be a building leakpath factor of 0.1 (maximum allowable leak rate of 10%). The following basic functions are required to maintain a building leakpath factor of 0.1:

a. Physical barriers must contain or limit the spread of radiological material in the event of an accident. This function is provided by periphery confinement barriers, which is ensured by compliance to DF 6.1; and

b. Radiological material escaping to the outdoors through doors or openings due to natural ventilation, personnel leaving through doors, wind pressure, or indoor fires must be limited. This function can be achieved through static building conditions (no forced ventilation and all external doors closed) or by forced ventilation systems that maintain the air pressure inside the periphery containment barrier negative with respect to surrounding areas. This function is met by confinement pressure differential requirements in LCO 3.1.1; and

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential

Bases: (continued)

APPLICATION TO SAFETY ANALYSIS (continued)

c. Forced ventilation exhaust paths must be filtered. This function is met by confinement exhaust filtration requirements in LCO 3.1.2.

Since pressure differentials are an integral part of maintaining "confinement," and filtered air provides a greater margin of safety over static building conditions, pressure differentials are required for those accident scenarios that credit "confinement."

LCO 3.1.1

LCO Overview:

LCO 3.1.1 ensures that the air pressure inside confinement areas is maintained negative with respect to atmosphere, except as allowed by the exception statements.

Applicable Areas:

The areas requiring coverage are determined by reviewing the applicable accident scenarios. Not every room has its own pressure differential indicator/controller. Instrumentation is strategically located to provide assurance that facility confinement is maintained.

Operability:

The functions or requirements that are necessary to meet the confinement pressure differential requirements are listed below:

1. Pressure differential indicators and low pressure differential alarms (alarms only for permanently installed instruments) shall be available to monitor pressure differentials inside periphery confinement barriers where determined by Engineering and Nuclear Safety.
2. Confinement pressure differential SRs in SR 4.1.1.1 must be met.

Support Systems:

The following is necessary to support the HVAC systems and is essential to meet LCO 3.1.1 or assumptions in the accident analysis:

- Electrical power

Electrical power will be maintained in accordance with contractor procedures until the LCO is discontinued. Configuration changes may be necessary as D&D progresses. Auxiliary or temporary configurations or systems may be required.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential Bases: (continued)

LCO 3.1.1 (continued)

Non-Essential Systems:
The following systems also support the HVAC systems, but are not required to meet LCO 3.1.1 or assumptions in the accident analysis:

- Diesel Generators
- Uninterruptible Power Supply (UPS) System
- Instrument Air

These systems contribute to reliability or ease of operation. However, in order to support the entire project duration, the accident analysis assumes a relatively unreliable HVAC system (loss of Zone I or Zone II pressure differentials is anticipated) specifically to account for the modifications required to dismantle HVAC equipment, operating in manual modes, and use of temporary electrical systems and air movers. Therefore, these systems are not required to meet the requirements in LCO 3.1.1 or assumptions in the accident analysis. Instrument Air, which provides the motive force for automatically controlling dampers, will be shut down or become unnecessary in steps as each controller is placed in manual mode. Diesel Generators and the UPS System will be maintained in accordance with AC 5.6.

APPLICABILITY

Overview:
LCO 3.1.1 is applicable at all times, except as allowed in the exception statements.

The accident analysis credits a pressure differential inside periphery confinement barriers rather than specific fans and controls. The HVAC system configuration will change throughout the project. At some point, systems will be placed in manual control and adjusted as necessary as ductwork, controllers, and walls that define the zones are removed. Modifications to ventilation systems are performed under IWCP and managed to ensure that LCO 3.1.1 can be met. Surveillances will continue to ensure that pressure differentials are maintained. Engineering and Nuclear Safety will determine the location of pressure differential measurement and control instrumentation required to ensure credited confinement pressure differential. Not all existing instruments will be relied upon to satisfy this requirement. Those instruments that are credited will be identified in accordance with AC 5.6.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential

Bases: (continued)

	Discontinuation: Ultimately, the HVAC systems must be shut down and removed. Therefore, the applicability statement also contains criteria for when the pressure differential requirements can be discontinued. The pressure differential requirements may be discontinued in an AFFECTED AREA when the AFFECTED AREA is determined to be OPERATIONALLY CLEAN. The determination of OPERATIONALLY CLEAN shall be performed in accordance with AC 5.5
EXCEPTION 1	Areas identified as airlocks can be opened to areas outside confinement and will lose pressure differentials when the outside sets of doors are opened. This results in a conflict with LCO 3.1.1 for airlocks located inside periphery confinement. Exception 1 allows the pressure differential in airlocks located inside periphery confinement (e.g., Rooms 184, 184A, 185, 195, 196 and 197 (dock), Rooms 192, 176, 149, Corridor D) to be lost when the outside sets of doors are opened. This will occur when moving oversized equipment, components, or groups of waste containers in or out of the facility through the airlocks. The office areas of Corridor E are separated from the Radiological Control Area by a periphery firewall and airlocks and are not subject to confinement pressure differential controls. The control room is maintained at a higher pressure than the surrounding Zone II areas to maintain habitability in the event of hazardous airborne materials. Therefore, the control room is not subject to confinement pressure differential controls. Other areas such as SCO Vestibules that contain insignificant quantities of radioactive materials are exempted from LCO 3.1.1 pressure differential requirements.
EXCEPTION 2	Exception 2 allows for transient pressure differential fluctuations. The exception is intended to cover activities or conditions that affect the pressure differential more quickly than the HVAC system can adjust or can be adjusted (e.g., rebalancing airflows after planned upsets, momentary gauge fluctuations due to external weather, temporary upsets when airlock doors are first opened). As necessary Work control documents check pressure differentials after planned upsets and rebalance airflows or restore pressure differentials.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.1 LIMITING CONDITIONS FOR OPERATION: Confinement Pressure Differential

Bases: (continued)

ACTION A.1	Condition A is entered when the pressure differential required in LCO 3.1.1 is less than 0.1 in. w.g. negative with respect to ATMOSPHERIC REFERENCE and the area is not exempted by the Exception statement. Condition A can also be entered if instrumentation used to monitor LCO requirements is not functioning properly. The REQUIRED ACTION to SUSPEND OPERATIONS in the AFFECTED AREAS effectively lowers initiating event frequencies. The 4-hour COMPLETION TIME was selected as reasonable to define the AFFECTED AREAS and take the steps necessary to safely SUSPEND OPERATIONS as defined in TSR Section 1.1.
ACTIONS B.1 and B.2	LCO 3.1.1 requires remote pressure-differential alarms in the Control Room for monitoring pressure differentials. Although this is not directly credited in the accident analysis, continuously monitoring the pressure differential enhances the reliability of the HVAC system by minimizing the time until a problem is discovered. Action B.1 requires the periodic pressure differential surveillance (SR 4.1.1.1) to be increased to once every 4 hours if an alarm is not functioning. This action can be entered if an existing alarm is not functioning or if an alarm is removed due to logistics of decommissioning. This applies only to indicators needed to demonstrate compliance with LCO 3.1.1. Indicators that become redundant or unnecessary as ductwork and interior walls are removed are not subject to this control. Action B.2 requires existing permanently installed pressure-differential alarms to be repaired within 30 days. This minimizes the time that an existing alarm is not available. New gages that are installed to monitor pressure differentials necessary to meet LCO 3.1.1, due to logistics of decommissioning, do not need to have a remote alarm installed if they are surveilled every 4 hours.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.1.1 SURVEILLANCE REQUIREMENTS (SRs): Confinement Pressure Differential

Bases: (continued)

SR 4.1.1.1	SR 4.1.1.1 requires pressure differentials to be verified daily. The pressure differential reading on the credited instrument must be at least 0.1 in. w.g. negative with respect to ATMOSPHERIC REFERENCE. This surveillance verifies that the pressure differential requirement is being met. Throughout much of the project, pressure differential readings can be continuously monitored using alarms in the Control Room. As ductwork and interior walls are removed from the process rooms, the number of indicators monitoring the pressure differential in an area will change. Only the existing permanently installed indicators needed to demonstrate compliance with LCO 3.1.1 must have alarms. Redundant or unused indicators may be removed. If an existing permanently installed alarm is required, but cannot be maintained due to logistics of decommissioning, the facility must increase the pressure differential surveillance frequency (SR 4.1.1.1) in accordance with REQUIRED ACTION B.1. New gages that are installed to verify that pressure differential requirements of LCO 3.1.1 are met do not have to alarm in the control room, but shall be surveilled every 4 hours to satisfy SR 4.1.1.1.
SR 4.1.1.2	This surveillance verifies that an alarm is received in the Control Room before the pressure differential in a confinement area degrades to 0.1 in. w.g. negative. Confinement areas may be covered by one or more pressure differential indicators. Only the credited indicator covering a designated confinement area is subject to this requirement. Alarm setpoints and operation of the alarms are tested when alarm loops are calibrated. The alarm setpoint of 0.2 in. wg negative accounts for instrument uncertainty and margin of safety.
Not Required: • Fan configuration • HVAC automatic controls	The accident analysis credits a pressure differential inside periphery containment barriers but does not specify what hardware is required to meet that function. Previous hardware requirements (e.g., number of fans) were discontinued in the 707/707A Decommissioning BIO based on the following: • The amount of exhaust airflow and, therefore, the number of exhaust fans required to maintain pressure differentials will decrease throughout the project as areas achieve OPERATIONALLY CLEAN. At some point, systems will be placed in manual operation and adjusted as necessary as ductwork, controllers, and walls that define the zones are removed. The system will be configured in a manner not conducive to interlocks (e.g. shutdown exhaust fans and supply fans or reduce individual fan flow rates).

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.1.1 SURVEILLANCE REQUIREMENTS (SRs): Confinement Pressure Differential

Bases: (continued)

- To account for the reduction in reliability associated with the modifications required to dismantle HVAC systems and use of temporary systems, the accident analysis anticipates pressure differential upsets
- Modifications to ventilation systems are performed under IWCP and managed to ensure that LCO 3.1.1 can be met
- Surveillances will continue to ensure that pressure differentials are maintained
- Redundant exhaust fans will be maintained per AC 5.6

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 Confinement Exhaust Filtration

LCO: Ventilation systems that exhaust air from Building 707/707A to outside atmosphere shall have at least one stage of HEPA filtration.

Applicability: This requirement is applicable at all times for ventilation systems that exhaust air from the Building 707/707A periphery confinement areas (which excludes office areas of Corridor E) to outside atmosphere. This requirement may be discontinued in an AFFECTED AREA when the AFFECTED AREA is OPERATIONALLY CLEAN.

Exception: Confinement Exhaust Filtration does not apply to unfiltered leakpaths that result from a loss of confinement pressure differential.

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Exhaust filters do not meet SR 4.1.2.1 filtration requirements (99.9% removal efficiency).	A.1 SUSPEND OPERATIONS in the AFFECTED AREA.	4 hours
B. Suspected loss of LCO-required filtration.	B.1 SUSPEND OPERATIONS in the AFFECTED AREA.	4 hours

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.1.2 SURVEILLANCE REQUIREMENTS (SRs): Confinement Exhaust Filtration

SURVEILLANCE REQUIREMENTS(SRs)		FREQUENCY
SR 4.1.2.1	Perform an in-place aerosol test of the credited HEPA filter stage for ventilation systems exhausting areas inside periphery confinement. ACCEPTANCE CRITERIA: Filter stage particle removal efficiency is at least 99.9% (maximum allowable leak rate of 0.1%).	18 Months
SR 4.1.2.2	Verify the pressure differential across the credited HEPA filter stage in ventilation systems exhausting areas inside periphery confinement. ACCEPTANCE CRITERIA: The indicated pressure differential across the credited HEPA filter stage is less than or equal to 4 in. w.g. or less than full scale if full scale is less than 4 in. w.g.	Monthly

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 LIMITING CONDITIONS FOR OPERATION: Confinement Exhaust Filtration Bases:

BACKGROUND

System Overview:
Buildings 707/707A were designed to confine radioactive material through a series of zones (or confinement areas) that are separated by physical barriers (e.g., gloveboxes for Zone I, walls for Zone II) and have air flow inward toward areas of higher contamination. The cascading air flow is sustained by controlling the amount of air entering or leaving each zone to produce increasingly negative pressures toward areas of potentially higher contamination.

LCO 3.1.2 applies to any ventilation system that exhausts from an area inside periphery confinement to outside atmosphere. Descriptions of the HVAC Systems in Building 707/707A (at the time this document was prepared) can be found in Chapter 2.

Impact of Decommissioning:
As part of decommissioning, all of the equipment and systems that exhaust and filter air from the facilities must ultimately be shut down, dismantled, and packaged as waste. System configurations will change significantly throughout the project. Therefore, LCO 3.1.2 was written at a functional level rather than for specific hardware.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 LIMITING CONDITIONS FOR OPERATION: Confinement Exhaust Filtration Bases: (continued)

APPLICATION TO SAFETY ANALYSIS

System Classification:
The accident analyses credits "confinement" with reducing the consequences of accidents to co-located workers to Risk Class III or below. Therefore, confinement exhaust filtration is considered a SAFETY-SIGNIFICANT SSC.

Applicable Accident Scenarios:
"Confinement" is credited or selected as DEFENSE-IN-DEPTH for accidents involving gloveboxes or other components in component staging areas, size reduction areas, and waste container staging areas. See Chapter 7 for a listing of the scenarios that rely on confinement.

Safety Function:
The accident analysis considers "confinement" to be a building leakpath factor of 0.1 (maximum allowable leak rate of 10% of airborne particulates). The following basic functions are required to maintain a building leakpath factor of 0.1:

a. Physical barriers must contain or limit the spread of radiological material in the event of an accident. This function is provided by periphery confinement barriers, and is ensured by compliance to DF 6.1;

b. Radiological material escaping to the outdoors through doors or openings due to natural ventilation, personnel leaving through doors, wind pressure, or indoor fires must be limited. This function can be achieved through static building conditions (no forced ventilation and all external doors closed) or by forced ventilation systems that maintain confinement pressure differential requirements in LCO 3.1.1; and

c. Forced ventilation exhaust paths must be filtered. This function is met by confinement exhaust filtration requirements in LCO 3.1.2.

Since filtering exhaust paths is an integral part of maintaining "confinement," filtered exhaust paths are required for those accident scenarios that credit "confinement."

(continued)

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 LIMITING CONDITIONS FOR OPERATION: Confinement Exhaust Filtration Bases: (continued)

APPLICATION TO SAFETY ANALYSIS (continued)

The relationship between leakpath factors (LPF), particle removal efficiencies (%Eff), and Leak Rates are shown in the following formulas:

$$LPF = 1 - \frac{\%Eff}{100}$$

$$\text{Leak Rate} = 100 - \%Eff$$

LCO 3.1.2

LCO Overview:
A LPF of 0.1 used in accident analysis dose calculations equates to a filter stage removal efficiency of 90%. LCO 3.1.2 requires a particle removal efficiency of 99.9%. The difference between the accident analysis (90%) and the LCO (99.9%) is considered the margin of safety. In addition, exhaust systems have more than one stage of filtration. The ventilation exhaust (in Building 707/707A) air passes through two to four filter stages (dependent upon the plenum). Only one stage of filters is required to have an efficiency of 99.9%. Although the additional filter stages in a plenum are not credited in the accident analysis, they will be left in place as DEFENSE-IN-DEPTH until the contractor determines that they are no longer required.

Applicable Areas:
Confinement exhaust filtration requirements are applicable to all forced ventilation exhaust systems serving areas of Building 707/707A within the periphery confinement barrier.

(continued)

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 LIMITING CONDITIONS FOR OPERATION: Confinement Exhaust Filtration

Bases: (continued)

LCO 3.1.2 (continued)	**Operability:** The functions or requirements that are necessary to meet the filtration requirements are listed as SRs in SR 4.1.2. Therefore, the facility is in compliance with LCO 3.1.2 when it is capable of meeting the requirements listed in SR 4.1.2. **Support Systems:** The HEPA filters, plenums, and frames are the only components needed to meet the filtration requirements. No separate support systems are required to meet the filtration requirements or maintain filtration assumptions in the accident analysis.
APPLICABILITY	LCO 3.1.2 is applicable at all times for permanent and replacement or temporary ventilation systems that exhaust from Building 707/707A periphery confinement areas to outside atmosphere. The office areas of Corridor E are not within the credited periphery confinement and are excluded from this requirement. **Discontinuation:** Ultimately, the HVAC systems will be shut down and removed. Therefore, the applicability statement also contains criteria for when the filtration requirements can be discontinued. The exhaust filtration requirements may be discontinued in an area when the area is determined to be OPERATIONALLY CLEAN. The determination of OPERATIONALLY CLEAN shall be performed in accordance with AC 5.5. Only one stage of filters in each active filter plenum must be credited to satisfy this LCO. Additional filter stages in series in filter plena and filter units provide DEFENSE-IN-DEPTH and will be maintained in place as long as practicable to provide additional levels of protection. See Design Features 6.1 Periphery Confinement Barriers. **Exception:** Confinement Exhaust Filtration does not apply to unfiltered leakpaths that result from a loss of pressure differential. Examples of pressure differential transients that could result in unfiltered leakpaths are personnel airlocks (e.g., Rooms 192, 176, 149, Corridor D), or the dock expanded airlocks (Rooms 184, 184A, 185, 195, 196 and 197) when the airlock doors are open for shipments. A loss of pressure differential is addressed in LCO 3.1.1.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 LIMITING CONDITIONS FOR OPERATION: Confinement Exhaust Filtration

Bases: (continued)

ACTION A.1	If the credited HEPA filters do not meet filtration requirements (e.g., failed to meet in-place aerosol test ACCEPTANCE CRITERIA), the facility shall SUSPEND OPERATIONS in the AFFECTED AREA. This REQUIRED ACTION limits activities inside the facility to minimize the potential for an unfiltered radiological release. The 4-hour COMPLETION TIME to SUSPEND OPERATIONS is intended to provide sufficient time to perform an orderly and safe suspension of affected activities as described in TSR Section 1.1, definition of SUSPENDED OPERATIONS. The 4-hour time period is considered to be short enough that accident initiation concurrent with the interval has an acceptably low probability.
ACTION B.1	A suspected loss of filtration can result from various sources such as: 1. An activity or operational event is suspected to have caused filter damage; 2. There is observed substantial damage to filters; 3. There is a significant change in the pressure differential across a credited filter stage that is not attributable to changes in system configuration; 4. Above normal contamination levels are observed downstream of the credited filter stage during radiological surveys, environmental monitoring, or effluent sampling (not including spurious alarms from effluent or radon-caused indications); or 5. Any other condition arises that could indicate a possible significant degradation of filtration. If the adequacy of credited HEPA filters is judged to be degraded, the ability to meet the building leakpath factor assumed in the accident analyses is uncertain. If there is a suspected loss of LCO-required filtration, the REQUIRED ACTION to SUSPEND OPERATIONS in AFFECTED AREAS shall be taken until an operability evaluation is made. This REQUIRED ACTION limits activities inside the facility to reduce the potential for an unfiltered radiological release. The 4-hour COMPLETION TIME to SUSPEND OPERATIONS is intended to provide sufficient time to perform an orderly and safe suspension of affected activities as described in TSR Section 1.1, definition of suspended operations. The 4-hour time period is considered to be short enough that accident initiation concurrent with the interval has an acceptably low probability. (continued)

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.1.2 LIMITING CONDITIONS FOR OPERATION: Confinement Exhaust Filtration

Bases: (continued)

ACTION B.1 (continued)	Ventilation exhaust systems may experience bypass leakage in which air may bypass the filter stages through degraded ducts, or exhaust fan shaft seals, or plenum openings. When these leakpaths occur downstream of the credited exhaust filter, a portion of the airborne particulates resulting from an accident may not get filtered, resulting in a radiological dose to the outside receptors higher than expected from fully filtered exhaust. Small leakpath openings would carry only a small fraction of the total building exhaust around the filters and is within the margin of safety provided by tested filters which provide 99.9% efficiency versus the 90% efficiency credited in the accident analysis. In ventilation systems in which additional filters provide DEFENSE-IN-DEPTH, additional filter efficiency also compensates for expected unfiltered leakpaths. Therefore, normal system degradations resulting in small bypass leakage do not challenge the dose consequences evaluated in the accident analysis, and CONDITION B is not entered. Large bypass leakage flow will be evaluated by Engineering and Nuclear Safety in accordance with COOP (e.g., Section 6.6.7), to determine if the building leakpath factor assumed in the accident analysis is challenged and whether CONDITION B is entered.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.1.2 SURVEILLANCE REQUIREMENTS(SRs): Confinement Exhaust Filtration

Bases (continued):

SR 4.1.2.1	SR 4.1.2.1 requires in-place aerosol tests to evaluate the particle removal efficiency of the credited filter stage. In-place testing evaluates all aspects of the filter stage (e.g., filter media, mounts, gaskets, and frames). The accident analysis credits a LPF of 0.1, to ensure the overall removal efficiency of a credited exhaust plenum or filter unit meets or exceeds that credited in the accident analysis. The in-place aerosol test must be performed every 18 months. This frequency is based on past experience and engineering judgement.
SR 4.1.2.2	The surveillance associated with LCO 3.1.2 Condition B will monitor pressure differentials across the credited filter stage. The pressure drop across the filter stage is surveilled because a high pressure differential (or pressure drop) across a filter can damage or tear out filter media and allow unfiltered air to leak past. This surveillance helps maintain the reliability of the HEPA filters by verifying that the filters have not loaded up to the point where their integrity is challenged. Failure of SR 4.1.2.2 places the facility in CONDITION B of LCO 3.1.2. By specification, new HEPA filters must be capable of withstanding a pressure drop of at least 10 in. w.g. without structural damage or reduction in filtration efficiency as specified in the *Nuclear Air Cleaning Handbook* (Ref. 2). An upper limit of 4 in. w.g. is a site criterion that was chosen based on many factors (e.g., filter strength, filter utilization, operating costs of higher pressure differentials, cost of filters, worker exposure, interruption of operations). For instruments where full scale is less than 4 in w.g., the acceptance criterion is a reading that is less than full scale. The monthly surveillance frequency is based on operating experience and engineering judgment.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITIONS FOR OPERATION: Fire Sprinkler Systems

LCO: Building 707/707A shall have OPERABLE automatic sprinklers in the following areas:

Building 707/707A: All areas inside the periphery confinement except:

X-Y Retriever, Rooms 135A, B, C and D, Room 141 (J-Vault), and Room 136 (H-vault), Corridor A, C-Pit

Applicability: This requirement is applicable at all times except as allowed in the exception statement. Sprinkler system requirements may be discontinued in an AFFECTED AREA when the area is determined to be OPERATIONALLY CLEAN.

Exception: Planned activities that permanently render individual sprinklers or sections or entire sprinkler systems inoperable may be handled in accordance with AC 5.3.1.3.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITIONS FOR OPERATION: Fire Sprinkler Systems

Actions:

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. A section of sprinklers or an entire sprinkler system is not OPERABLE.	A.1	Discontinue Hot Work in the AFFECTED AREA (except as required to restore sprinkler system).	IMMEDIATELY
	AND		
	A.2	Establish a fire watch in AFFECTED AREA.	4 hours
	AND		
	A.3	Restore sprinklers	30 days
B. Individual sprinklers or sections of sprinklers are temporarily inoperable due to planned activities (Planned OUT-OF-TOLERANCE).	B.1	Remove combustible materials from AFFECTED AREA as directed by Fire Protection Engineering.	Before entering Condition B
	AND		
	B.2	Implement additional precautions specified by Fire Protection Engineering.	Before entering Condition B
	AND		
	B.3	Restore sprinklers.	30 days
C. A section of sprinklers or an entire sprinkler system is not OPERABLE. **AND** The facility is notified that Fire Department staffing is inadequate to respond to a fire.	C.1	Discontinue Hot Work in the AFFECTED AREA (except as required to restore sprinkler system).	IMMEDIATELY
	AND		
	C.2	Establish a fire watch in AFFECTED AREA.	4 hours
	AND		
	C.3	SUSPEND OPERATIONS in the AFFECTED AREA.	4 hours

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Note: Sprinklers operability problems may also impact operability of the Plenum Deluge Systems (LCO 3.3).

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.2 SURVEILLANCE REQUIREMENTS(SRs): Fire Sprinkler Systems

SURVEILLANCE REQUIREMENTS(SRs)		FREQUENCY
SR 4.2.1	Ensure that normal water supply pressure is being maintained. ACCEPTANCE CRITERIA: Verify that the static pressure is greater than or equal to the minimum values listed below at each credited sprinkler system riser. Risers A, B, C, and E — 50 psig Riser D (with oil storage) — 70 psig Riser D (without oil storage) — 50 psig	Monthly
SR 4.2.2	Verify that the water supply is available to the sprinklers. ACCEPTANCE CRITERIA: Verify that the post indicating valves (PIVs) and control valves associated with credited 707/707A risers are locked in the proper position.	Monthly
SR 4.2.3	Verify that there has not been a degradation in the condition of the water supply (e.g., blocked or degraded valves or lines). ACCEPTANCE CRITERIA: Flow test the main drain and verify that residual water pressure is greater than or equal to the minimum values listed below. Risers A, B, C, and E — 45 psig Riser D (with oil storage) — 65 psig Riser D (without oil storage) — 45 psig	Annually

4.2 SURVEILLANCE REQUIREMENTS(SRs): Fire Sprinkler Systems (continued)

SURVEILLANCE REQUIREMENTS(SRs)		FREQUENCY
SR 4.2.4	Perform a floor-level visual inspection of the observable portions of sprinkler systems supported by each riser. ACCEPTANCE CRITERIA: 1. Verify that sprinkler heads are properly oriented, free from unacceptable obstruction, and free of external corrosion or foreign materials. 2. Verify that sprinkler heads, piping and fittings are free from leaks, deterioration and physical damage. 3. Verify that piping hangers and seismic bracing (if applicable) appear functional and are free from physical damage.	Annually

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Note: The Bases also discuss functions or features that are not required to meet LCO 3.2. The list may not be all-inclusive, but it addresses important functions or features that will be removed or must be disabled to support the decommissioning process. These discussions provide an understanding of how decommissioning will impact the systems and help clarify OPERABILITY for LCO 3.2.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION: Fire Sprinkler Systems

Bases:

BACKGROUND

System Overview:

Water for the sprinkler systems in Building 707/707A is supplied by the domestic cold water (DCW) mains. The DCW mains are looped throughout the plant site so that water may be provided from two different directions. Lead-in lines from the DCW main supply water to each of the sprinkler system risers. Chapter 2, Fig. 2.4 also identifies the area (or equipment) supplied by each riser.

When a fire occurs, heat rising from the fire causes individual sprinklers to open as they are heated to their design temperature. The water impinges on the sprinkler deflector to produce a uniform spray pattern. The sprinklers provide fire control (i.e., reduce the heat release rate of a fire, prevent its regrowth, and hold the fire to the area of its origin) by discharging water directly on the burning material.

Impact of Decommissioning:

As part of decommissioning, all of the sprinkler systems must ultimately be shut down, dismantled, and packaged as waste. System configurations will change during the project. Therefore, the controls were written to allow some flexibility to perform decommissioning activities.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

Redundant water supplies to the filter plenum deluge systems in Building 707/707A are required to support concurrent operation of filter plenum deluge systems and fire suppression sprinklers per *NSTR-007-00, Adequacy of Building 707 Fire Water Supplies for Concurrent Operation of the Filter Plenum Deluge System and the Fire Suppression System* (Ref. 3). Concurrent operation of these two systems is expected for two fire scenarios: (1) fires that originate on the first floor and are large enough to generate hot gases and burning embers that are carried into the ventilation exhaust system and initiate a fire in the associated filter plenum, and (2) fires that originate on the second floor and grow to consume a filter plenum. NSTR-007-00 credits parallel water supplies to the Building 707/707A filter plenum deluge systems with providing adequate water flow when fire suppression systems are also activated. In the event of a fire, if the primary riser does not have the capacity to support both the fire suppression sprinklers and the plenum deluge systems, then the secondary riser (which is supplied from a different underground supply main) will automatically supply the deluge system through parallel open supply valves. For this reason, D&D activities that require temporary isolation of a riser or permanent decommissioning of a fire suppression supply or distribution system must consider the effect on water supplies to both fire sprinklers and plenum deluge and their credited redundancy.

Areas affected by water supply deficiency for each riser are identified below:

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Riser	Affected Area
A	Sprinklers on 1st floor between column lines and rows A1 to L5, on 2nd floor between column lines and rows C1 to L5, and Plenums PL-101, PL-102, PL-103, PL-104, FU-45, and FU-46.
B	Sprinklers on 1st floor between column lines and rows A5 to L9, on 2nd floor between column lines and rows C5 to L9.
C	Sprinklers on 1st floor between column lines and rows A9 to L13 and A13 to C15, on 2nd floor between column lines, and rows C9 to L13 and Plenums PL-105, PL-106, PL-108, FU-21, FU-22, FU-23, FU-24, FU-25, and FU-26.
D	Sprinklers on 1st floor between column lines and rows C13 to L17 and A15 to C17, on 2nd floor between column lines and rows C13 to L17 and Plenums PL-107, PL-107A, and FU-27
E	Sprinklers on 1st and 2nd floors between column lines and rows L1 to Q5, All plenums (PL-101 through PL-108, FU-21 through FU-27, FU-45, and FU-46)
Any combination	Combine Affected Areas for individual risers above.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

APPLICATION TO SAFETY ANALYSIS

System Classification:
The accident analyses credits sprinkler systems with reducing the frequency of large and major fires. The reduction in frequency is relied upon to reduce the Risk Class of these fires for co-located workers and the public. The hazard analysis (Chapter 5) also concluded that sprinklers are required to protect immediate workers. Based on the discussion above, sprinkler systems are considered a SAFETY-SIGNIFICANT SSC.

Applicable Accident Scenarios:
See Chapter 7 for a listing of the scenarios that rely on sprinklers. The fire scenarios that credit sprinklers involve gloveboxes or other components in component staging areas, size reduction areas, and waste container staging areas.

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Safety Function:
Sprinklers reduce the frequency of large and major fires by controlling or limiting fires. Discharging water directly on burning material reduces the heat release rate of a fire and limits growth. Operating sprinklers also pre-wet adjacent combustibles, which reduces fire spread and holds the fire to the area of origin.

Sprinklers also indirectly help protect the HEPA filters in the event of a fire by controlling and cooling the temperature of room air being drawn into ductwork and entering a filter plenum. Discharging water directly on the burning material reduces the heat release rate of the fire, and the spray cooling ability of sprinklers further reduces the temperature of the air.

Sprinklers are also effective for worker safety. *National Fire Protection Association (NFPA 101)* (Ref. 4) recognizes sprinklers in numerous ways for life safety. For example, sprinklers cool the smoke and make it possible for a person to remain in the area much longer than possible without sprinklers, which extends evacuation time and allows longer exit distances.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

LCO 3.2

LCO Overview:
LCO 3.2 ensures that OPERABLE automatic sprinklers protect the areas that may contain significant quantities of radioactive materials.

Applicable Areas:
The sprinkler coverage requirements are determined by reviewing applicable fire scenarios. The required areas are all areas inside the periphery confinement of Building 707/707A except the X-Y retriever, Rooms 135A, B, C and D, Room 141 (J-Vault), Room 136 (H-Vault) Corridor A and C-Pit. Office areas of Corridor E are not inside periphery confinement and are not subject to LCO 3.2 requirements. The areas requiring coverage in LCO 3.2 are served by the 707/707A Risers A, B, C, D and E.

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Operability:
Several basic functions or requirements must be met for a sprinkler system to be considered OPERABLE. These requirements are listed as SRs in SR 4.2. Therefore, a sprinkler system is considered OPERABLE when it meets the requirements listed in SR 4.2.

Support Systems:
The following systems support the sprinkler systems and are required to meet LCO 3.2 or assumptions in the accident analysis:

- Domestic Cold Water System

This system will be maintained in accordance with contractor procedures until the LCO is discontinued. This system is addressed in the Site SAR.

Non-Essential Systems:
The following systems interface with the Fire Sprinkler System, but are not required to meet LCO 3.2 or assumptions in the accident analysis:

- Site fiber-optic loop and Plant Alarm System
- Building 707/707A Complex Fire Alarm System

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

LCO 3.2 (continued)	These systems provide remote alarms to the Fire Department. To support the entire project duration, the accident analysis does not credit remote alarms or Fire Department response. Therefore, these fire alarm systems are not needed to meet the requirements in LCO 3.2 or assumptions in the accident analysis. However, remote fire riser flow alarms will be maintained in accordance with AC 5.6.
APPLICABILITY	**Overview:** LCO 3.2 is applicable at all times until the discontinuation criteria in the applicability statement are met, except as allowed in the Exception statement. Since the applicability statement hands off to the Exception statement, the facility does not need to declare an OUT-OF-TOLERANCE with respect to LCO 3.2 when following the Exception statement. The CONDITIONS and REQUIRED ACTIONS provide options for addressing unplanned deficiencies and impairments. The REQUIRED ACTIONS shall also be entered prior to performing activities that result in a Planned OUT-OF-TOLERANCE. **Discontinuation:** Ultimately, the sprinkler systems must be shut down and removed. Therefore, the applicability statement also contains criteria for when the sprinkler requirements can be discontinued. The sprinkler system requirements may be discontinued in an AFFECTED AREA when the AFFECTED AREA is determined to be OPERATIONALLY CLEAN. The determination of OPERATIONALLY CLEAN shall be performed in accordance with AC 5.5.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

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EXCEPTION	Decommissioning 707/707A requires activities that permanently remove sprinklers from service (e.g., cutting, capping, and removing lines that obstruct ductwork removal; permanently removing ceiling tiles). Operable sprinklers are preferred, and use of this Exception should be minimized. The Exception provides an authorized method for safely handling these activities. Historical sprinkler impairments or coverage problems can also be handled using the Exception. The Exception hands off to an administrative program in AC 5.3.1.3 that minimizes fire hazards in areas with inoperable sprinklers. Since the LCO hands off to an Administrative Control, deviations from the Administrative Controls are handled as AC NON-COMPLIANCES. The facility can follow the Administrative Controls for the remaining life of the facility. Work control documents (e.g., IWCP) and/or surveillance procedures are appropriate for invoking AC 5.3.1.3 for a planned activity.
ACTION A.1	Initiators for fire scenarios include sparks or heat from operations, maintenance, and decommissioning activities that ignite combustible material. Sparks and heat are produced primarily from Hot Work as defined by Project Fire Protection Engineering or contractor procedures (e.g., welding, plasma arc and grinding) and electrical shorts. The possibility of electrical shorts or overheating associated with operating electrical equipment (e.g., fans, lights, size reduction tent airmovers, Continuous Air Monitoring System (CAMS), Criticality Accident Alarm System (CAAS), extension cords, sawzalls, nibblers) poses a small amount of risk. However, the risk of fire associated operating electrical equipment is much smaller than the risk associated with Hot Work. Therefore, REQUIRED ACTION A.1 requires the facility to discontinue Hot Work when sprinklers are inoperable, which effectively lowers the frequency of fire initiators. Suspending additional activities would not significantly affect the amount of electrical equipment operating in the facility or further reduce the likelihood of a fire. The COMPLETION TIME of IMMEDIATELY requires the facility to define the AFFECTED AREAS and suspend Hot Work as soon as practicable, not to exceed 1 hour. Activities that constitute Hot Work are defined in contractor procedures.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

ACTION A.2	LCO 3.2 cannot be met if the facility has sprinkler deficiencies or if an entire sprinkler system is not OPERABLE. Therefore, the facility shall establish a fire watch in the AFFECTED AREAS in accordance with contractor procedures. The function of the fire watch is to identify conditions that may lead to a fire, detect fires, and initiate emergency response. The 4-hour COMPLETION TIME was selected as reasonable to define the AFFECTED AREA and assign appropriate personnel to Fire Watch duty. Fire Watches must be established in accordance with site procedures.
ACTION A.3	Action A.3 requires the facility to repair the system within 30 calendar days. This lowers the likelihood of a fire spreading in an area with inoperable sprinklers by limiting the length of time that sprinklers may be inoperable. Invoking the Exception for LCO 3.2 precludes the requirement to enter REQUIRED ACTIONS A.1, A.2 or A.3.
R4-02 ACTIONS B.1, B.2, and B.3	Decommissioning 707/707A requires performing activities that temporarily render sprinklers inoperable (e.g., removing ceiling tiles, blocking sprinkler spray pattern) or require a sprinkler system to be temporarily isolated (e.g., sprinkler system maintenance or repair, isolating a sprinkler section to cut and cap a line that does not have isolation valves). CONDITION B provides an approved method for safely performing these activities as a planned OUT-OF-TOLERANCE. ACTION B.1: The requirement to remove combustible materials as directed by Fire Protection Engineering effectively lowers initiating event frequencies and consequences by removing materials that can ignite or propagate a fire. ACTION B.2: Implementing additional precautions specified by Fire Protection Engineering (e.g., fire watches, heat collector curtains around ceiling tile openings) reduces the likelihood, or mitigates the consequences, of a fire. These actions are specific to the conditions surrounding the activity and are in addition to controls already in the Fire Protection Safety Management Program (SMP). When ceiling tiles are removed for short duration access, attending personnel can provide the equivalent of a continuous Fire Watch. In conjunction with removing combustible materials, the additional precautions specified by Fire Protection Engineering reduce the likelihood and consequences of a fire in the AFFECTED AREA as much as is reasonable.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

ACTIONS B.1, B.2, and B.3 (continued)	REQUIRED ACTIONS B.1 and B.2 must be implemented prior to initiating the activity because CONDITION B is considered a Planned OUT-OF-TOLERANCE. REQUIRED ACTIONS B.1 and B.2 lend themselves to implementation through work control documents (e.g., IWCP). ACTION B.3 requires the sprinklers to be restored within 30 days. This limits the duration of Planned OUT-OF-TOLERANCES. It also lowers the likelihood of a fire spreading in an area where planned work activities temporarily render sprinklers inoperable by limiting the length of time that sprinklers may be inoperable.
ACTION C.1	Initiators for fire scenarios include sparks or heat from operations, maintenance, and decommissioning activities that ignite combustible material. Sparks and heat are produced primarily from Hot Work as defined by Project Fire Protection Engineering or contractor procedures (e.g., welding, plasma arc and grinding) and electrical shorts. The possibility of electrical shorts or overheating associated with operating electrical equipment (e.g., fans, lights, size reduction tent airmovers, Continuous Air Monitoring System (CAMS), Criticality Accident Alarm System (CAAS), extension cords, sawzalls, nibblers) poses a small amount of risk. However, the risk of fire associated with operating electrical equipment is much smaller than the risk associated with Hot Work. Therefore, REQUIRED ACTION C.1 requires the facility to discontinue Hot Work when sprinklers are inoperable, which effectively lowers the frequency of fire initiators. Suspending additional activities would not significantly affect the amount of electrical equipment operating in the facility or further reduce the likelihood of a fire. The COMPLETION TIME of IMMEDIATELY requires the facility to define the AFFECTED AREAS and suspend Hot Work as soon as practicable, not to exceed 1 hour. Activities that constitute Hot Work are defined in contractor procedures.

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3.2 LIMITING CONDITION FOR OPERATION (LCO): Fire Sprinkler Systems

Bases: (continued)

ACTION C.2	LCO 3.2 cannot be met if the facility has sprinkler deficiencies or if an entire sprinkler system is not OPERABLE. Therefore, the facility shall establish a fire watch in the AFFECTED AREAS in accordance with contractor procedures. The function of the fire watch is to identify conditions that may lead to a fire, detect fires, and initiate emergency response. The 4-hour COMPLETION TIME was selected as reasonable to define the AFFECTED AREA and assign appropriate personnel to Fire Watch duty. Fire Watches must be established in accordance with site procedures.
ACTION C.3	ACTION C.3 requires the facility to SUSPEND OPERATIONS in areas with inoperable sprinklers if the facility is notified that the Fire Department staffing is inadequate to respond to a fire. Although Fire Department response is not directly credited in the accident analysis, this action provides a layer of defense against possible fires. The REQUIRED ACTIONS are completed in accordance with TSR Section 1.1, definition of SUSPEND OPERATIONS. Site SAR section 7.5.1.2, Requirements for Organization and Management, requires a trained, qualified, and adequately staffed Fire and Emergency Services Department at RFETS 24 hours per day. Unlike in CONDITION A, restoration of sprinklers is not included here because the Fire Department is expected to be staffed prior to the 30 days required to restore the spinklers. The AFFECTED AREA for this condition is the area where the sprinklers are inoperable. The 4-hour COMPLETION TIME was selected as reasonable to define the AFFECTED AREA and SUSPEND OPERATIONS.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.2 SURVEILLANCE REQUIREMENTS(SRs): Fire Sprinkler Systems

Bases: (continued)

SR 4.2.1	*Inspection, Testing, and Maintenance of Water-Based Fire Protection System (NFPA 25)* (Ref. 5) requires that the static pressure in wet-pipe sprinkler systems be verified once per month to ensure that normal water supply pressure is maintained. SR 4.2.1 verifies that the static pressure for risers A, B, C, E is greater than or equal to 50 psig. Riser D with flammable/combustible liquids (greater than 35 gallons) stored in Module H or Room 196, shall have a static pressure of 70 psig or greater. With less than 35 gallons of flammable/combustible liquids stored in these areas, the D Riser static pressure shall be 50 psig or greater. Fire Protection Engineering (FPE) established minimum static pressure requirements for each riser from design criteria including gauge uncertainty (Ref. 11). D Riser pressure requirements are based on oil storage calculations for areas with sprinkler systems (Ref. 12) and do not apply to the plenum deluge system. Plenum deluge static pressure requirements are met at 50 psig or greater. Although the values are intended to be a threshold that may indicate a problem rather than an absolute minimum pressure, they are used as OPERABILITY criteria for LCO 3.2. Risers that feed sprinkler systems and plenum deluge systems that are no longer required by the Applicability or Exception statements of this LCO are exempted from compliance to this Surveillance Requirement.
SR 4.2.2	NFPA 25 requires that the alignment of locked control valves be verified once per month to ensure that water is available to required fire suppression systems. SR 4.2.2 verifies that the PIVs and control valves for sprinkler systems are locked or sealed (e.g. tie-wrap) in their normally open or closed positions. Risers that feed sprinkler systems and plenum deluge systems that are no longer required by the Applicability or Exception statements of this LCO are exempted from compliance to this Surveillance Requirement.
SR 4.2.3	NFPA 25 requires that a main drain flow test be conducted annually to determine if there has been a change in the condition of the water supply piping and control valves. SR 4.2.3 verifies that the residual pressure for risers A, B, C, E, is greater than or equal to 45 psig Riser D, with flammable/combustible liquid (greater than 35 gallons) stored in module H or Room 196, shall have a residual pressure of 65 psig. With less than 35 gallons of flammable/combustible liquids stored in these areas, the D Riser residual pressure shall be 45 psig or greater. Fire Protection Engineering established minimum residual pressure requirements for each riser from design criteria and previous surveillance results. D Riser

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.2 SURVEILLANCE REQUIREMENTS(SRs): Fire Sprinkler Systems

Bases: (continued)

SR 4.2.3 (continued)	pressure requirements are based on oil storage calculations for areas with sprinkler systems (Ref. 12) and do not apply to the plenum deluge system. Plenum deluge static pressure requirements are met at 50 psig or greater. Although the values are intended to be a threshold that may indicate a problem rather than an absolute minimum pressure, they are used as OPERABILITY criteria for LCO 3.2.
SR 4.2.4	ACCEPTANCE CRITERIA 1. Sprinkler activation time and spray pattern are intrinsic functions of the sprinkler heads to ensure that adequate protection is provided. Installation orientation of sprinkler heads and physical obstructions (ducts, piping, etc.) can influence the spray pattern and cause areas to not be protected. Corrosion, paint, fixatives, and other coatings not part of the original sprinkler design can delay the activation time of the sprinklers, cause them to not activate at all, or obstruct water flow from the sprinkler orifice. In all of these cases, the affected activation time or spray pattern can cause an increase in fire size beyond that anticipated in the accident analysis. ACCEPTANCE CRITERIA 2. Leaks and physical damage to sprinklers, piping, and fittings can be an indication of an impact to system integrity. The leaks or damage can be an indicator of a possible failure point, which could question the reliability of the system under fire conditions. Dynamic reactions in the piping during sprinkler activation can cause catastrophic failure of the system, thus impacting accident analysis assumptions of reliability. Physical damage to sprinklers can include bent or missing deflectors, which will also influence spray pattern.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.2 SURVEILLANCE REQUIREMENTS(SRs): Fire Sprinkler Systems

Bases: (continued)

SR 4.2.4 (continued)

ACCEPTANCE CRITERIA 3.

The support devices for the sprinkler system can influence the spray pattern and function of the system. Missing, damaged, or inadequate hangers or seismic bracing can stress joints and fittings or change the spray pattern of sprinklers based on deflection of the piping. These conditions are similar to the concerns identified in ACCEPTANCE CRITERIA Sections 1. and 2. above.

The Facility Manager or Designee has responsibility to evaluate the impact of system deficiencies on OPERABILITY in order to maintain facility safety. When ACCEPTANCE CRITERIA deficiencies are identified the inspector documents the findings and presents them to facility management . Facility management may interpret the deficiency to warrant entry into REQUIRED ACTIONS, or may request determination of OPERABILITY impact through the technical concern process. An alternative may be to enter REQUIRED ACTIONS as a conservative response to the deficiency, while concurrently awaiting determination through the technical concern process. A determination of OPERABLE may preclude entry into CONDITION A (A section of sprinklers or an entire sprinkler system is not OPERABLE) or CONDITION C (A section of sprinklers or an entire sprinkler system is not OPERABLE AND the facility is notified that Fire Department staffing is inadequate to respond) as long as the determination is made within the COMPLETION TIME specified for the CONDITION. If entry into the REQUIRED ACTIONS was taken as the conservative approach, then the determination of OPERABILITY can be used to step out of the REQUIRED ACTIONS taken.

NFPA 25 requires that sprinklers, piping and hangers be visually inspected annually. The inspections are conducted on observable portions of the system from the floor level. Sprinklers and piping installed in concealed spaces or areas inaccessible for safety considerations are not required to be inspected. It is expected that all other areas will receive a systematic and rigorous inspection. Discovered deficiencies SHALL be reviewed by FPE and Nuclear Safety for determination of impact on credited function and adequacy of inspection performance. Sprinklers that are no longer

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.2 SURVEILLANCE REQUIREMENTS(SRs): Fire Sprinkler Systems

Bases: (continued)

SR 4.2.4 (continued)	required by the Applicability or Exception statements of this LCO are exempted from compliance to this Surveillance Requirement.
Not Required: • Sprinkler Waterflow Alarms	Although Fire Department services are available, the accident analysis did not credit Fire Department response with preventing or mitigating the consequences of any fire scenarios. Therefore, the sprinkler waterflow (riser) alarms are not required for the sprinkler system to be OPERABLE. Waterflow alarms are tested by opening inspector's test connections and verifying that an alarm is received at the Fire Dispatch Center (FDC) Since the accident analysis did not credit Fire Department response, an inspector's test is not required for the sprinkler system to be OPERABLE. However, the waterflow alarms will be maintained in accordance with AC 5.6. Waterflow alarms were not considered in the accident analysis partially to support the logistics of dismantling the facility. The waterflow alarm consists of a pressure-operated switch that is wired directly to a fire alarm panel. Fire alarm panel interfaces to the fiber-optic loop (707/707A) must be removed as part of stripout activities. Therefore, the sprinkler waterflow alarms can be maintained only until the fire panels and associated wiring are removed. Once the fire panels and associated wiring are removed, the Fire Department can still be notified by phone, radio, or wireless transmitters.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.3 LIMITING CONDITIONS FOR OPERATION: Plenum Deluge Systems

LCO: Manual actuation capability of plenum deluge nozzles upstream of the mist eliminator (plenum baffle or demister screen) shall be OPERABLE for the following Building 707/707A exhaust filter plenums:

FU-21	FU-27	PL-104
FU-22	FU-45	PL-105
FU-23	FU-46	PL-106
FU-24	PL-101	PL-107
FU-25	PL-102	PL-108
FU-26	PL-103	

APPLICABILITY: This requirement is applicable at all times in Building 707/707A. The plenum deluge system requirements may be discontinued when the areas served by a plenum are determined to be OPERATIONALLY CLEAN or when the filter plenum is not an exhaust pathway to the outside atmosphere.

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Plenum Deluge System is not OPERABLE.	A.1 Repair plenum deluge system.	120 days

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.3 SURVEILLANCE REQUIREMENTS(SRs): Plenum Deluge Systems

	SURVEILLANCE REQUIREMENTS(SRs)	FREQUENCY
SR 4.3.1	Verify that the deluge system upstream of the mist eliminator (plenum baffle or demister screen) can be manually actuated. ACCEPTANCE CRITERIA: The deluge valve supplying nozzles upstream of the mist eliminator (plenum baffle or demister screen) shall open using the manual trip or manual bypass. The test must open the deluge valve but does not require flow of water from the system.	Annually

Note: 1. In order for plenum deluge systems to perform their intended function, they must have adequate water supplies. However, since the plenum deluge systems share the same water supplies as the sprinkler systems, the water supplies only need to be verified in accordance with sprinkler system surveillances SR 4.2.1, SR 4.2.2, and SR 4.2.3.

2. The Bases also discuss functions or features that are not required to meet LCO 3.3. The list may not be all-inclusive, but it addresses functions or features that will be removed or must be disabled to support the decommissioning process. These discussions provide an understanding of how decommissioning will impact the systems and help clarify OPERABILITY for LCO 3.3.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.3 LIMITING CONDITIONS FOR OPERATION: Plenum Deluge Systems

Bases:

BACKGROUND

System Overview:
As described in Chapter 2, plenum deluge systems are installed in exhaust filter plenums to protect the HEPA filters in the event of a fire. Hot air, smoke, contaminated products of combustion, sparks, and debris may be drawn into exhaust ductwork during a fire. Deflectors at the plenum inlets distribute the incoming air and mix it with air from other zones. When activated, the plenum deluge system cools the air stream as it moves through the plenum with an array of water spray nozzles. Mist eliminators (baffles or demister screens) downstream of the spray nozzles stop most of the sparks and fire debris and remove much of the water from the air stream before it reaches the HEPA filters. Water from the deluge system collects on the floor where it is carried away by floor drains.

Impact of Decommissioning:
Although the plenum deluge system is important to safety, keeping it in service while dismantling the facility presents some problems. Specifically, the plenum drain lines in Building 707/707A, which are required to support the plenum deluge system, run through process rooms below the plenum rooms and dump to tanks in the Building 731 waste pit. The internally contaminated drain lines and catch tanks must be removed prior to cold stripout and structural decontamination. Therefore, the deluge systems may be modified to maintain the deluge system function as decommissioning activities progress. The facility will maintain the ability to spray water upstream of demister screens, but may modify the system as follows:

- Disable the automatic actuation circuitry (i.e., heat detectors and deluge control panels) to protect against inadvertent actuation.
- Remove the plenum drain lines and install an approved radiological containment (e.g., water seal trap) on drain lines supporting active systems. If a deluge system is actuated, the drains will dump water onto process room floors.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.3 LIMITING CONDITIONS FOR OPERATION: Plenum Deluge Systems

Bases: (continued)

APPLICATION TO SAFETY ANALYSIS

System Classification:
The accident analyses selected plenum deluge systems as DEFENSE-IN-DEPTH for fire scenarios that could challenge HEPA filtration. In other words, plenum deluge systems are considered a layer of defense against fire scenarios, but they are not credited with reducing the frequency or consequences of any fire scenarios. Therefore, plenum deluge systems are considered a SAFETY-SIGNIFICANT SSC.

Applicable Accident Scenarios:
See Chapter 7 for a listing of the scenarios that rely on plenum deluge systems. These scenarios evaluate fires involving gloveboxes and other components in component staging areas, size reduction areas, and waste container staging areas. The plenums listed in LCO 3.3 were determined by reviewing the locations of the applicable scenarios.

Safety Function:
Plenum deluge systems cool air as it moves through a plenum with an array of water spray nozzles. The deluge systems, in conjunction with demister screens protect exhaust HEPA filters from high temperature air (which softens the glue), smoke, sparks, and debris that may be produced by a fire in the facility and drawn into exhaust ductwork. The plenum deluge systems support the assumption that HEPA filters remain intact and can perform their intended function in the event of a fire.

Each filter plenum and filter unit in Building 707/707A is provided with redundant plenum deluge water supplies. This redundancy ensures that adequate water supplies are provided to protect exhaust filters even when concurrent plenum deluge and fire sprinkler system actuation is required during some large and major fire accident scenarios (Ref. 3). See LCO 3.2 for additional information.

LCO Overview:
LCO 3.3 ensures that the filter plenums listed under the LCO are protected by OPERABLE plenum deluge systems.

Applicable Areas:
The plenum deluge system requirements are applied to existing plenums and filter units that exhaust air through credited HEPA filters to the outside atmosphere.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.3 LIMITING CONDITIONS FOR OPERATION: Plenum Deluge Systems

Bases: (continued)

LCO 3.3

Operability:
The functions or requirements that are necessary for a plenum deluge system to be considered OPERABLE are listed below:

1. The water supply for the deluge system (e.g., 707/707A Systems A, B, C, D and E) must meet the requirements in SR 4.2.1, SR 4.2.2, and SR 4.2.3 for Fire Sprinkler Systems. Note: For Riser D, the "without oil storage" ACCEPTANCE CRITERIA for SR 4.2.1 and SR 4.2.3 is the ACCEPTANCE CRITERIA for plenums supplied by Riser D regardless if oil is being stored. The "with oil storage" ACCEPTANCE CRITERIA only applies to LCO 3.2.
2. Plenum Deluge System SRs in SR 4.3 must be met.

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Support Systems:
The following systems support the plenum deluge systems and are required to meet LCO 3.3 or assumptions in the accident analysis:

- Domestic Cold Water System

This system will be maintained in accordance with contractor procedures until the LCO is discontinued. This system is addressed in the Site SAR.

Non-Essential Systems:
The following systems are not required to meet LCO 3.3 or assumptions in the accident analysis:

- Electrical Power System (fire alarm control panels)
- Fiber-optic loop and Plant Alarm System (fire alarm control panels)

These systems support operation of the fire alarm control panels and remote alarms to the Fire Department. However, in order to support the entire project duration, the accident analysis does not credit alarms or Fire Department response. Therefore, these support systems are not needed to meet the requirements in LCO 3.3 or assumptions in the accident analysis. However, these systems will be maintained to support fire alarm control panels and remote alarms in accordance with AC 5.6.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.3 LIMITING CONDITIONS FOR OPERATION: Plenum Deluge Systems

Bases: (continued)

APPLICABILITY	**Overview:** The plenum deluge requirements are applicable at all times until the discontinuation criteria in the applicability statement are met. The LCO applies to plenums PL-101 through PL-108 and filter units FU-21 through FU-27, FU-45, and FU-46. The LCO only applies to the plenums and filter units that are an exhaust pathway to atmosphere. **Discontinuation:** Ultimately, the plenum deluge systems must be shut down. Therefore, the applicability statement contains the criteria for when the plenum deluge requirements can be discontinued. The requirements may be discontinued for a plenum (or filter unit) when the areas served by the plenum are determined to be OPERATIONALLY CLEAN or when the filter plenum is not an exhaust pathway for air to the outside atmosphere. The OPERATIONALLY CLEAN determination shall be performed in accordance with AC 5.5.
ACTION A.1	The REQUIRED ACTION to return the plenum deluge system to OPERABILITY places the DEFENSE-IN-DEPTH system back into service. The 120-day COMPLETION TIME was selected as appropriate for restoring a DEFENSE-IN-DEPTH function.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.3 SURVEILLANCE REQUIREMENTS(SRs): Plenum Deluge Systems

Bases (continued):

SR 4.3.1	This surveillance conducts an operational test of the deluge valves. The water supply may be isolated during the test to prevent water flow. If the water supply is isolated, actuation of the valve can be verified by a release of water pressure in the line.
Not Required: • Full flow tests, adequate spray pattern and coverage	Previous AB documents required full flow tests to verify that the system operates properly and that flow through nozzles are adequate. This requirement was discontinued in the 707/707A Decommissioning BIO based on the following: • All spray nozzles are not visible from outside the plenum. • The plenums are not routinely accessed so it is not likely that the nozzles will be inadvertently misaligned or damaged. • Drain lines will be removed at some point and the drains will dump water onto process room floors if the deluge system actuates. This risk of spreading contamination is acceptable to mitigate the consequences of a fire, but not for a surveillance. • The previously required three-year flow test interval is not compelling based on the relatively short project duration in conjunction with the reduction of hazards throughout the project. • The plenum deluge systems are considered DEFENSE-IN-DEPTH.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.3 SURVEILLANCE REQUIREMENTS(SRs): Plenum Deluge Systems

Bases: (continued)

Not Required:

- Heat detectors
- Fire alarm control panels
- Panel batteries
- Supervised circuitry

Previous AB documents (i.e., 707/707A BIO and supporting Fire Protection System Evaluation Reports) required tests and inspections to verify that automatic actuation equipment is adequate. This requirement is discontinued in the 707/707A Decommissioning BIO based on the following:

- When responding to a fire, one of the primary objectives of the Fire Department is to assign personnel to monitor filter plenums and ventilation systems. At the first sign of high heat or smoke with particulates, the Fire Department will manually actuate the deluge system. The Fire Department does not depend on or wait for an overheat alarm or automatic actuation.
- The facility will disable the automatic actuation circuitry (i.e., heat detectors and deluge control panels) to protect against inadvertent actuation due to decommissioning activities.
- Plenum deluge systems are considered DEFENSE-IN-DEPTH.
- Plenum heat detectors, fire alarm control panels, and the remote alarms will be maintained in accordance with AC 5.6.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.3 SURVEILLANCE REQUIREMENTS(SRs): Plenum Deluge Systems

Bases: (continued)

Not Required: • Fire Department notification	Although Fire Department services are available, the accident analysis did not credit Fire Department response with preventing or mitigating the consequences of any fire scenarios. Therefore, remote annunciation of fire alarm control panel alarms is not required for the plenum deluge system to be OPERABLE. However, fire alarm control panels and the remote alarms will be maintained in accordance with AC 5.6. Plenum fire alarm control panel alarms to Fire Dispatch were not considered in the accident analysis partially to support the logistics of dismantling the facility. When a heat detector actuates it sends a signal to the associated fire alarm control panel. The panel simultaneously actuates a local alarm, sends an alarm to Fire Dispatch (via the fiber-optic loop), and sends a signal to actuate the solenoid-operated valve. Therefore, alarms to Fire Dispatch can be maintained only until the fiber-optic loop connections are removed. Once the fiber-optic connections are removed, the Fire Department can still be notified by phone, radio, or wireless transmitters. In addition, plenum deluge alarms are never expected to be the first notification or alarm to the Fire Department.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITIONS FOR OPERATION: Criticality Accident Alarm System

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LCO: The CAAS serving the 707/707A COMPLEX shall be OPERABLE.

Applicability: This requirement is applicable at all times. The requirement for annunciation may be discontinued in an AFFECTED AREA when the AFFECTED AREA is outside the 12-Rad boundary of any potential criticality.

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Exception: Areas where permanent CAAS audibility/visibility non-compliant configurations exist may be handled in accordance with AC 5.7.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION(LCO): Criticality Accident Alarm Systems

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CAAS display panel is not OPERABLE.	A.1 SUSPEND OPERATIONS in the affected Facilities.	IMMEDIATELY
B. An area is covered by only two neutron detectors.	B.1 Restore at least three-detector coverage in AFFECTED AREA.	15 days
C. The REQUIRED ACTION or associated COMPLETION TIME for CONDITION B is not met.	C.1 SUSPEND OPERATIONS in the AFFECTED AREA.	IMMEDIATELY
D. Any area is not covered by at least two detectors.	D.1 SUSPEND OPERATIONS in the AFFECTED AREA.	IMMEDIATELY

3.4 LIMITING CONDITION FOR OPERATION(LCO): Criticality Accident Alarm Systems

Actions:

E. Unplanned CAAS annunciation inadequacy *	E.1 SUSPEND OPERATIONS in the 707/707A COMPLEX. **OR**	IMMEDIATELY
	E.2.1 Conduct a controlled evacuation of the AFFECTED AREA. **AND**	2 hours
	E.2.2 Post the AFFECTED AREA as an inadequate CAAS annunciation area. **AND**	2 hours
	E.2.3 If re-entry is desired, implement AC 5.7 compensatory measures.	Prior to re-entry into AFFECTED AREA following evacuation and posting.
F. Planned CAAS annunciation inadequacy*	F.1 Post the AFFECTED AREA as an inadequate CAAS annunciation area. **AND**	Prior to conduct of the OUT-OF-TOLERANCE activity
	F.2 Implement AC 5.7 compensatory measures.	Prior to conduct of the OUT-OF-TOLERANCE activity
G. CONDITION A, D or E above **AND** Open Criticality Safety infraction	G.1. Conduct a controlled evacuation of the AFFECTED AREA	2 hours

* Life Safety/Disaster Warning (LS/DW) System does not meet criticality alarm audibility criteria and a criticality beacon is not visible from within the AFFECTED AREA.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.4 SURVEILLANCE REQUIREMENTS(SRs): Criticality Accident Alarm Systems

SURVEILLANCE REQUIREMENTS(SRs)		FREQUENCY
SR 4.4.1	Test each detector individually to verify response to a neutron source. ACCEPTANCE CRITERIA: Each neutron detector detects and alarms when subjected to a neutron test source.	Monthly
SR 4.4.2	Test coincidence circuitry by activating two detectors and verifying that the system latches into alarm mode. ACCEPTANCE CRITERIA: Tripping two detectors activates audible and visual alarms.	Monthly
SR 4.4.3	Verify that the criticality alarm tone signal generator is patched as the highest priority signal in the building LS/DW System. ACCEPTANCE CRITERIA: The criticality alarm tone sounds and overrides any competing signals.	Annually
SR 4.4.4	Perform field observations to ensure CAAS visual or audible alarms are OPERABLE within the 12-Rad boundary. ACCEPTANCE CRITERIA: Verify audibility or visibility of criticality alarm within 12-Rad boundary in accordance with Nuclear Criticality Safety Manual requirements.	Annually
SR 4.4.5	Verify that loss of AC power to the criticality alarm panel results in a trouble alarm. ACCEPTANCE CRITERIA: A trouble alarm is activated at the panel when AC power is removed.	Monthly

Note: The Bases also discuss functions or features that are not required to meet LCO 3.4. The list may not be all-inclusive, but it addresses functions or features to help clarify what is necessary to meet LCO 3.4.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases:

BACKGROUND

System Overview:
The Criticality Accident Alarm System serving the 707/707A COMPLEX consists of detectors, a criticality alarm display panel, criticality beacons and a criticality tone generator in the LS/DW cabinet. The criticality alarm tone is the highest priority input to the LS/DW system and overrides any competing signals. If a criticality is detected the LS/DW system will broadcast an audible criticality alarm to ensure that personnel in the 12-Rad area of the criticality are notified of a criticality.

If one detector trips, a local trouble alarm (sonalert) on the Criticality Alarm Panel will sound. If two or more detectors trip, the Criticality Alarm Panel activates the criticality alarm tone generator. The criticality alarm tone is broadcast throughout the 707/707A COMPLEX by the LS/DW system to provide 12-Rad area evacuation notification. The Criticality Alarm Panel also activates beacons located at entrances to the facility. The beacons also provide 12-Rad area evacuation notification and keep co-located workers from inadvertently entering the facility.

Design of the system and components, including detectors, detection circuitry, alarm circuitry, audible alarms, visual alarms, communication interfaces, and interface priorities are based on *ANSI/ANS-8.3-1997* (Ref. 7) and the *Nuclear Criticality Safety Manual* (Ref. 8). Requirements for the Criticality Accident Alarm System are derived from *DOE Order 420.1* (Ref. 9) and the Site Nuclear Criticality Safety Manual.

Impact of Decommissioning:
As part of decommissioning, the Criticality Accident Alarm System must ultimately be shut down, dismantled, and packaged as waste. Detection and notification coverage requirements may change during the project as areas are cleaned out and criticality analyses are updated. Modifications to the system will be performed in accordance with the Criticality Safety Program requirements.
(continued)

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

APPLICATION TO SAFETY ANALYSIS	**System Classification:** The hazard analysis (Chapter 5) evaluates worker safety and concludes that Criticality Accident Alarm Systems are required to protect workers. The accident analysis (Chapter 6) evaluates criticality accident scenarios and selects Criticality Accident Alarm Systems as DEFENSE-IN-DEPTH for co-located workers. Based on the discussion above, Criticality Accident Alarm Systems are considered a SAFETY-SIGNIFICANT SSC. **Applicable Accident Scenarios:** The accident analysis (Chapter 6) evaluates criticality accident scenarios and selects Criticality Accident Alarm Systems as DEFENSE-IN-DEPTH for co-located workers. The effect of the Criticality Accident Alarm System on dose consequences is not quantified. **Safety Function:** The Criticality Accident Alarm System minimizes building worker exposure to radiation from a criticality by detecting the criticality and providing immediate building evacuation notification (through LS/DW speakers and beacons) to personnel in the 12-Rad area. The entrance beacons also keep co-located workers from inadvertently entering the facility.
LCO 3.4	**LCO Overview:** LCO 3.4 requires that the 707/707A COMPLEX has an OPERABLE Criticality Accident Alarm System. **Applicable Areas:** This requirement applies to the 707/707A COMPLEX. The Criticality Safety Program determines the specific areas requiring coverage. (continued)

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

LCO 3.4 (continued)

Operability:

The functions or requirements that are necessary for a Criticality Accident Alarm System to be considered OPERABLE are listed below:

1. Detection: Each area where a criticality is credible shall be covered by at least three neutron detectors. Criticality detector coverage is not required for areas that meet detection exemption criteria (e.g., per the Nuclear Criticality Safety Manual). Detector coverage evaluations are made in accordance with the Criticality Safety Program (e.g., INS-488-SWCSI-036), which allows engineered and administrative controls to maintain coverage. Therefore, administrative controls specified by the Criticality Safety Program (e.g., limitations on portable shielding, restrictions on component or waste container storage arrays, restrictions on waste container stacking, or restrictions on other activities that may shield detectors) may be used to ensure three-detector coverage.

2. Notification: Evacuation notification shall be provided for personnel in the 12-Rad area in the event of a criticality. Notification may be provided by audible alarms (e.g., LS/DW System) or visual alarms (e.g., criticality beacons), which must be automatically activated.

   Compensatory measures may also be implemented through AC 5.7 to permit access to areas with inadequate audible or visual alarms. The compensatory measures include a number of options that involve equipment, training, and details that are more appropriately managed as an administrative program rather than an LCO. Therefore, the compensatory measures for inadequate annunciation are implemented and managed by AC 5.7.

(continued)

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

LCO 3.4 (continued)

Support Systems:

The following systems support the Criticality Accident Alarm System and are required to meet LCO 3.4 or assumptions in the accident analysis:

- Electrical Power System (the CAAS is not OPERABLE if the Criticality Alarm Display Panel or LS/DW System is operating on battery backup or Diesel Generator Power). The CAAS is considered OPERABLE during diesel generator testing or during other electrical power outages of less than or equal to one minute duration.
- LS/DW System (consisting of priority relays, amplifiers, speakers, and associated wiring)

These systems will be maintained in accordance with contractor procedures until LCO 3.4 is discontinued.

Non-Essential Systems:

The following systems also interface with the Criticality Accident Alarm System but are not required to meet LCO 3.4 or assumptions in the accident analysis:

- Diesel Generator Power
- SIO Loop and Plant Alarm System

These systems provide remote alarms or contribute to reliability. However, in order to support the entire project duration, the accident analysis assumes that the facilities will be removed from the SIO loop and does not credit remote response. Therefore, the SIO Loop and Plant Alarm System are not required to meet LCO 3.4 or assumptions in the accident analysis. As mentioned above, the facility cannot continue operations if the Criticality Alarm Display Panel or LS/DW System is operating on battery backup or Diesel Generator Power for greater than one minute except for diesel generator testing. Therefore, Diesel Generator Power is not needed to meet the requirements in LCO 3.4 or assumptions in the accident analysis. However, these systems will be maintained in accordance with AC 5.6.

APPLICABILITY

Overview:

LCO 3.4 is applicable at all times.

Discontinuation:

Ultimately, the Criticality Accident Alarm System must be shut down and removed. Therefore, the applicability statement also contains criteria for when the requirements can be discontinued. The requirement for annunciation (audible or visual) may be discontinued in an AFFECTED AREA when the maximum foreseeable absorbed dose will not exceed 12

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

APPLICABILITY (continued)	rad. The applicability statement does not contain discontinuation criteria for detection. Therefore, a TSR Page Change is required to discontinue criticality detection requirements.
EXCEPTION	Areas of the 707/707A COMPLEX may not have adequate CAAS audibility/visibility annunciation capability due to lack of installed equipment, inadequate performance of existing equipment, or failure of existing equipment. A permanent CAAS audibility/visibility non-compliant configuration is intended to cover those situations where there is no intent to install LS/DW equipment or a criticality beacon, or to fix a LS/DW or a criticality beacon deficiency in the area due to cost-benefit considerations. Entry into and conduct of activities in areas with a permanent non-compliant CAAS configuration are to be conducted utilizing the compensatory measures covered by the Nuclear Criticality Safety Manual and AC 5.7. Note that the establishment and maintenance of postings of permanent non-compliant areas are to be covered by AC 5.7 as compensatory measures. The postings for permanent non-compliant areas are not covered by LCO 3.4.
ACTION A.1	Condition A is entered if the Criticality Alarm Display Panel is not able to perform its intended functions, or if it is operating on battery backup or Diesel Generator Power. Loss of the main panel functions results in a loss of criticality detection and alarm capabilities. The CAAS is considered OPERABLE, and entry into REQUIRED ACTION A.1 is not required, during diesel generator testing or during other electrical power outages of less than or equal to one minute duration. The REQUIRED ACTION to SUSPEND OPERATIONS in the affected facilities ensures that activities that could lead to a criticality event are not performed while areas exist in the facility that do not have an OPERABLE CAAS. The affected facilities for REQUIRED ACTION A.1 are Buildings 707 and 707A of the 707/707A COMPLEX. The adequacy of this REQUIRED ACTION must be based upon a documented determination by Criticality Engineering that a criticality event is incredible while operations are suspended.

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3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

ACTION A.1 (continued)	The IMMEDIATE COMPLETION TIME will stop work and place it in a safe condition as soon as practicable. The probability of a criticality occurring as work is placed in a safe configuration or as workers leave work areas (e.g., exit size reduction tents) is acceptably low.
ACTION B.1	Coincident actuation of any two detectors activates a criticality alarm. However, three detector coverage is required so that failure of a single detector will not prevent the system from detecting a criticality. This redundancy improves reliability, which is lost if only two detectors are covering an area. The REQUIRED ACTION to restore three-detector coverage restores the system such that it meets the OPERABILITY requirements. The 15-day COMPLETION TIME allows adequate time to repair detectors. In addition, the likelihood of another detector failure and a criticality during this time period is acceptably low. Actions to restore OPERABILITY should be completed in a minimum time frame. If three-detector coverage is not restored within 15 days, then CONDITION C is entered. There is no violation associated with CONDITION B if the REQUIRED ACTIONS of CONDITION C are entered within the specified COMPLETION TIME of CONDITION B.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

ACTION C.1	The REQUIRED ACTION to SUSPEND OPERATIONS ensures that activities that could lead to a criticality event are not preformed while areas exist in the facility that do not have an OPERABLE CAAS. The adequacy of this REQUIRED ACTION must be based upon a documented determination by Criticality Engineering that a criticality event is incredible while operations are suspended. The AFFECTED AREA for this condition includes the area of inadequate detector coverage. The IMMEDIATE COMPLETION TIME will stop work and place it in a safe condition as soon as practicable. The probability of a criticality occurring as work is placed in a safe configuration or as workers leave work areas (e.g., exit size reduction tents) is acceptably low.
ACTION D.1	Coincident actuation of any two detectors activates a criticality alarm. If an area is not covered by at least two detectors, a criticality in the area may not be detected. CONDITION D is entered if an area is not covered by at least two detectors. The coverage problem may be due to a variety of conditions (e.g., inoperable detectors, detector shielding issues, etc.). The REQUIRED ACTION to SUSPEND OPERATIONS ensures that activities that could lead to a criticality event are not preformed while areas exist in the facility that do not have an OPERABLE CAAS. The adequacy of this REQUIRED ACTION must be based upon a documented determination by Criticality Engineering that a criticality event is incredible while operations are suspended. The AFFECTED AREA for this condition includes the area of inadequate detector coverage. The IMMEDIATE COMPLETION TIME will stop work and place it in a safe condition as soon as practicable. The probability of a criticality occurring as work is placed in a safe configuration or as workers leave work areas is acceptably low.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

ACTION E.1

An inadequate CAAS annunciation situation exists in an AFFECTED AREA when the LS/DW System does not meet audibility requirements (e.g., inadequate volume, excessive background noise, inoperable LS/DW, failure to meet SR 4.4.4) and a criticality beacon is not visible.

If a CAAS annunciation inadequacy exists, the CAAS cannot reliably notify workers of a criticality. If this condition is DISCOVERED (i.e., unplanned), the facility has two alternative sets of ACTIONS that can be taken. One course is to SUSPEND OPERATIONS in the 707/707A COMPLEX. If there is a need or a desire to continue operations in the 707/707A COMPLEX, the facility shall conduct a controlled evacuation of the AFFECTED AREA and post the AFFECTED AREA as an inadequate CAAS annunciation area. If there is a need or a desire to conduct work in the AFFECTED AREA following the evacuation and posting of the area, the facility shall implement AC 5.7 compensatory measures prior to re-entering the AFFECTED AREA to conduct the work.

If adequate CAAS annunciation capability does not exist, ACTION E.1 requires SUSPENDING OPERATIONS in the 707/707A COMPLEX as one of two options. The REQUIRED ACTION to SUSPEND OPERATIONS ensures that activities that could lead to a criticality event are not performed while areas exist in the facility that do not have an OPERABLE CAAS. The adequacy of the REQUIRED ACTION must be based on a documented determination by Criticality Engineering that a criticality event is incredible while operations are suspended. The SUSPEND OPERATIONS REQUIRED ACTION is expected to begin IMMEDIATELY following DISCOVERY of the CONDITION.

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3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

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ACTION E.2.1	If adequate CAAS annunciation capability does not exist, ACTION E.2.1 requires conducting a controlled evacuation as one of two options, removing workers from areas where the CAAS annunciation capability is degraded. The evacuation of the AFFECTED AREA ensures that personnel in the 707/707A COMPLEX are only located in areas where they can be informed that a criticality event is occurring. The 2-hour COMPLETION TIME was selected as a reasonable amount of time to define the AFFECTED AREA and to notify workers in the area to place any work being conducted in the area in a safe configuration and then to exit the area. ACTION E.2.1 relies upon ACTION E.2.2 to post the AFFECTED AREA to prevent inadvertent entry into the evacuated area until AC 5.7 compensatory measures are implemented. Evacuating the AFFECTED AREA prior to implementation of AC 5.7 compensatory measures ensures that all personnel previously in the AFFECTED AREA are aware of the CAAS annunciation inadequacy and have appropriate compensatory measures for CAAS alarm notification before re-entering the area.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

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ACTION E.2.2

If adequate CAAS annunciation capability does not exist, ACTION E.2.2 requires that the AFFECTED AREA be posted to prevent entry into the area without appropriate compensatory measures as covered by AC 5.7. The posting must be in place within the specified COMPLETION TIME of 2 hours.

Inadequacies associated with the posting of the AFFECTED AREA can result from errors in the initial posting or due to changing configurations leading to changes in the AFFECTED AREA without commensurate changes to the posting. These posting inadequacies, if DISCOVERED, are considered to be failures to perform the REQUIRED ACTIONS associated with an LCO CONDITION and are thus VIOLATIONS of the LCO. The posting of the AFFECTED AREA is not covered under AC 5.7 compensatory measures following entry into CONDITION E.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

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ACTION E.2.3	If adequate CAAS annunciation capability does not exist, ACTION E.2.3 requires the implementation of AC 5.7 compensatory measures prior to re-entry into the AFFECTED AREA following an evacuation and posting of the area. The AC 5.7 compensatory measures ensure that personnel in the AFFECTED AREA have adequate CAAS annunciation capability, other than the LS/DW or a visible criticality beacon. A COMPLETION TIME of "prior to re-entry into the AFFECTED AREA following evacuation and posting" is specified since AC 5.7 compensatory measures are not required unless entry into the area is desired while operations continue in the 707/707A COMPLEX. ACTION E.2.3 relies upon ACTION E.2.1 to evacuate the area and ACTION E.2.2 to post the AFFECTED AREA to prevent inadvertent entry into the AFFECTED AREA without appropriate compensatory measures, as required by AC 5.7. Implementation of AC 5.7 compensatory measures does not exit the LCO 3.3.1 CONDITION E. The CAAS is still in an OUT-OF-TOLERANCE even though AC 5.7 compensatory measures allow entry into the AFFECTED AREA and conduct of operations. However, if AC 5.7 compensatory measures are not met, the REQUIRED ACTIONS to be taken are identified as part of AC 5.7 and a VIOLATION of LCO 3.3.1 does not occur.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

ACTION F.1

A planned inadequate CAAS annunciation situation exists in an AFFECTED AREA when the LS/DW System does not meet audibility requirements due to the conduct of a planned activity (e.g., high noise activity) and a criticality beacon is not visible in the area.

If a CAAS annunciation inadequacy exists, the CAAS cannot reliably notify workers of a criticality. If this CONDITION is planned, the facility shall post the AFFECTED AREA as an inadequate CAAS annunciation area and implement AC 5.7 compensatory measures prior to conducting the work in the AFFECTED AREA. CONDITION F is written to clearly define the REQUIRED ACTIONS for planned OUT-OF-TOLERANCES associated with CAAS annunciation requirements.

If a CAAS annunciation inadequacy is planned, ACTION F.1 requires that the AFFECTED AREA be posted to prevent entry into the area without appropriate compensatory measures as covered by AC 5.7. The posting must be in place prior to the conduct of the OUT-OF-TOLERANCE activity.

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When CONDITION F is entered associated with the conduct of high noise operations, posting of the AFFECTED AREA per ACTION F.1 and implementing AC 5.7 compensatory measures prior to the work evolution per ACTION F.2 are all that is required under this LCO. Once the work is completed and the planned OUT-OF-TOLERANCE CONDITION is no longer needed, it is not necessary to perform a SURVEILLANCE of the LS/DW System audibility or the criticality beacon in addition to that required by the frequency associated with SR 4.4.4. Since entry into CONDITION F was planned and did not involve the failure of the LS/DW System or a criticality beacon, the OPERABILITY of these items does not need to be verified as part of exiting CONDITION F unless SR 4.4.4 is due to be performed.

Inadequacies associated with the posting of the AFFECTED AREA can result from errors in the initial posting or due to changing configurations leading to changes in the AFFECTED AREA without commensurate changes to the posting. These posting inadequacies, if DISCOVERED, are considered to be failures to perform the REQUIRED ACTIONS associated with a LCO CONDITION and are thus VIOLATIONS of the LCO. The posting of the AFFECTED AREA is not covered under AC 5.7 compensatory measures following entry into CONDITION F.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

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ACTION F.2	If a CAAS annunciation inadequacy is planned, ACTION F.2 requires the implementation of AC 5.7 compensatory measures prior to the conduct of the OUT-OF-TOLERANCE activity. The AC 5.7 compensatory measures ensure that personnel in the AFFECTED AREA have adequate CAAS annunciation capability, other than the LS/DW or a visible criticality beacon. ACTION F.2 relies upon ACTION F.1 to post the AFFECTED AREA to prevent inadvertent entry into the AFFECTED AREA without appropriate compensatory measures, as required by AC 5.7. Implementation of AC 5.7 compensatory measures does not exit the LCO 3.4 CONDITION F. The CAAS is still in an OUT-OF-TOLERANCE even though AC 5.7 compensatory measures allow entry into the AFFECTED AREA and conduct of operations. However, if AC 5.7 compensatory measures are not met, the REQUIRED ACTIONS to be taken are identified as part of AC 5.7 and a VIOLATION of LCO 3.4 does not occur.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

3.4 LIMITING CONDITION FOR OPERATION: Criticality Accident Alarm Systems

Bases: (continued)

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ACTION G.1

The evacuation of the AFFECTED AREA when there is an open criticality infraction concurrent with entry into ACTIONS A, D, or E ensures worker protection if a nuclear criticality event were to occur.

Entry into CONDITION A, while an open criticality infraction exists within the 707/707A COMPLEX requires a controlled evacuation of the entire 707/707A COMPLEX 12-Rad boundary.

Entry into CONDITION D, while an open criticality infraction exists within an area not covered by at least two detectors requires a controlled evacuation of the entire 707/707A COMPLEX 12-Rad boundary. If the open criticality infraction exists outside the detector deficient area, entry into CONDITION G is not required.

Entry into CONDITION E, while an open criticality infraction exists within the 707/707A COMPLEX requires a controlled evacuation of the inadequate CAAS annunciation area.

The two-hour COMPLETION TIME is a reasonable time to safely evacuate the AFFECTED AREA, given that the probability of a criticality accident occurring concurrent with this period is acceptably low. This action protects the assumptions of criticality incredible evaluations (e.g., RDH-008).

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.4 SURVEILLANCE REQUIREMENTS(SRs): Criticality Accident Alarm Systems

Bases:

SR 4.4.1	This surveillance verifies that each detector is operating properly and activates at the minimum neutron flux in accordance with site procedures. This is consistent with the Nuclear Criticality Safety Manual (Ref. 8) which recommends monthly radiation response testing unless a lesser frequency is justified. The monthly detector test alarms one detector at a time. This places one detector in the alarm mode and leaves at least two other detectors covering the area. The likelihood of a false alarm is increased since only one additional detector must be activated to get a criticality alarm. However, detection and evacuation notification requirements can still be met and the system is still OPERABLE.
SR 4.4.2	This surveillance verifies that components such as coincident logic circuits, alarm relays, and tone generators are working properly by activating two detectors and verifying audible and visual alarms. This surveillance is consistent with the Nuclear Criticality Safety Manual, which requires that the entire Criticality Accident Alarm System, including the tone generator, is tested periodically (at least Monthly). This surveillance activates the system, which effectively renders the system inoperable because it is unable to notify workers of an actual criticality event. Therefore, this surveillance must be performed under TSR 3.0.7 or TSR 3.0.8 (Planned OUT-OF-TOLERANCE), and the facility shall SUSPEND OPERATIONS during testing.
SR 4.4.3	This surveillance verifies that the criticality alarm tone signal generator is patched as the highest priority signal in the building LS/DW System. This surveillance confirms that the criticality alarm will override LS/DW System voice announcements from building and Central Alarm Station microphones. This surveillance is consistent with the Nuclear Criticality Safety Manual, which requires that the entire Criticality Accident Alarm System be tested periodically (at least Annually). This surveillance activates the system, which effectively renders the system inoperable because it is unable to notify workers of an actual criticality event. Therefore, this surveillance must be performed under TSR 3.0.7 or TSR 3.0.8 (Planned OUT-OF-TOLERANCE), and the facility shall SUSPEND OPERATIONS during testing.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.4 SURVEILLANCE REQUIREMENTS(SRs): Criticality Accident Alarm Systems

Bases: (continued)

SR 4.4.4	The Nuclear Criticality Safety Manual requires periodic testing of alarm tone audibility or indication of visual warning in all areas to be evacuated. This surveillance invokes the Nuclear Criticality Safety Manual, which requires that the entire Criticality Accident Alarm System, including audible and visual alarms, be tested periodically (at least Annually). This surveillance activates the system, which effectively renders the system inoperable because it is unable to notify workers of an actual criticality event. Therefore, this surveillance must be performed under TSR 3.0.7 or TSR 3.0.8 (Planned OUT-OF-TOLERANCE), and the facility shall SUSPEND OPERATIONS during testing.
SR 4.4.5	This surveillance removes AC power to the CAAS panel for a short duration and verifies that the trouble alarm activates. Therefore, this surveillance must be performed under TSR 3.0.7 or TSR 3.0.8 (Planned OUT-OF-TOLERANCE), and the facility shall SUSPEND OPERATIONS during testing. The panel batteries do not provide power to all parts of the system (e.g., beacons), and since Diesel Generator Power is not credited, the system may not be operable if AC input power is lost. If AC input power is lost, a local alarm will sound and the batteries supply the DC power to operate the Criticality Alarm Display Panel. The backup batteries and local alarm provide a layer of defense against a loss of AC power to the panel. The CAAS is considered OPERABLE during diesel generator load testing or during other electrical power outages lasting less than or equal to one minute. The probability of a criticality occurring during the short time period is acceptably low.

3/4 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

4.4 SURVEILLANCE REQUIREMENTS(SRs): Criticality Accident Alarm Systems

Bases: (continued)

Not Required: • Criticality Alarm Panel Batteries	The Criticality Alarm Display Panel batteries are not required to meet LCO 3.4 based on the following: • The batteries provide a layer of defense against a loss of AC power, but all parts of the system (e.g., beacons) are not supplied by the batteries and may not operable. Therefore, the batteries are not credited and are not part of the OPERABILITY criteria. • CONDITION A requires the facility to SUSPEND OPERATIONS if AC power to the criticality panel is lost. • A local alarm will sound if AC power to the panel is lost, if the battery charging voltage is insufficient, or if the battery voltage drops to an unacceptable level. • Criticality Alarm Display Panel batteries will be maintained in accordance with AC 5.6.
Not Required: • Trouble Alarm to Central Alarm Station	The Trouble Alarm to Central Alarm Station is not required to meet LCO 3.4 based on the following: • A remote trouble alarm at the Central Alarm Station provides a layer of defense against a problem with the Criticality Accident Alarm System, but a response initiated from the Central Alarm Station is not part of the OPERABILITY criteria. • A local alarm will sound if AC power to the panel is lost, if the battery charging voltage is insufficient, or if the battery voltage drops to an unacceptable level. • CONDITION A requires the facility to SUSPEND OPERATIONS if the Criticality Alarm Display Panel is not functioning properly. • The SIO Loop, which transmits alarms to the Central Alarm Station, will be maintained in accordance with AC 5.6.

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5 ADMINISTRATIVE CONTROLS

5.0 General Application of Administrative Controls

Use and application of ADMINISTRATIVE CONTROLS is specified in TSR Sections 3.0 and 4.0.

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5 ADMINISTRATIVE CONTROLS

The following definitions and controls apply to Administrative Control.

Available A formally designated person who can be notified and is fit to perform required duties.

On Duty A person who is present and performing job tasks or functions.

Shift A **Shift** ends when the CCA returns the facility to standby (placing the facility in SUSPEND OPERATIONS) at the end of a scheduled work period or the next scheduled **Shift** begins. A **Shift** begins when the CCA takes the facility out of standby.

Working Hours A period of time when qualified workers and the CCA are scheduled and staffed. "Qualified Workers" refers to those trained to perform the activity necessary to restore a non-compliant condition. Periods of time when the facility is in standby (e.g., nights, weekends, holidays) are not **Working Hours**. When the term "**Working Hours**" is used as the COMPLETION TIME for an Administrative Control CONDITION, and the associated REQUIRED ACTIONS are initiated, the facility must complete the REQUIRED ACTIONS prior to placing the facility in standby.

5.1 Minimum Staffing

This section contains minimum staffing requirements. These requirements do not directly support assumptions in the accident analysis, but ensure that staffing is adequate to implement TSR controls and ensure safe operations. This section satisfies Section 5.5.X.3 of DOE-STD-3009-94 (Ref. 10), which requires that facilities include a commitment to facility staffing requirements.

5.1.1 Minimum Staffing Requirements

a. At least one qualified Stationary Operating Engineer (SOE) shall be **On Duty** and one additional qualified SOE dedicated to the 707/707A COMPLEX shall be on site and **Available**.

   Applicability: This requirement is applicable at all times (24 hours a day). This requirement may be discontinued when all areas within the 707/707A COMPLEX are OPERATIONALLY CLEAN.

b. At least one qualified Configuration Control Authority (CCA) shall be **On Duty**.

   Applicability: This requirement is applicable when workers are actively performing:

   - Hazardous Material Handling (see Chapter 4, Section 4.3);
   - Radioactive Waste Generation and Handling Activities (see Chapter 4, Section 4.4);
   - Decommissioning Activities (see Chapter 4, Section 4.5); or

- Tests or surveillances that require entry into a planned OUT-OF-TOLERANCE or use of LCO 3.0.7.

This requirement may be discontinued when all areas in the 707/707A COMPLEX are OPERATIONALLY CLEAN.

c. At least one qualified CCA shall be **Available**.

Applicability: This requirement is applicable at all times when a CCA is not required to be **On Duty**. The requirement for a qualified CCA may be discontinued when all areas in the 707/707A COMPLEX are OPERATIONALLY CLEAN.

5 ADMINISTRATIVE CONTROLS

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Minimum staffing requirements are not maintained.	A.1 Restore staffing to minimum requirements. **OR** A.2 SUSPEND OPERATIONS in 707/707A COMPLEX.	4 hours 4 hours

SRs:

None Required

Bases:

AC 5.1.1.a This AC requires at least one SOE to be **On Duty** to operate equipment and perform duties required by LCOs and SRs. Two SOEs are required to effectively respond to emergency situations. Therefore, a second SOE must be on site and **Available** to help respond to emergency situations. The minimum number of SOEs was chosen based on judgement of the minimum number of people needed to perform key duties during routine activities and operational events.

As the project continues, the duties required of SOEs will decrease. For example, the number of safety components (e.g., fans, plenums, and deluge systems) will decrease as fewer areas require safety functions such as pressure differentials and filtration. Similarly, the number of parameters to be monitored, the number of surveillances to be performed, and the number of components to be checked during rounds will decrease. Ultimately, there will be no safety equipment and no Control Room.

There will no longer be requirements for SAFETY SSCs once all of the areas in the 707/707/A COMPLEX are OPERATIONALLY CLEAN. Therefore, this requirement may be discontinued when all areas within the 707/707A COMPLEX are OPERATIONALLY CLEAN.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.1.1.b	This AC requires at least one CCA to be **On Duty** during working **Shifts** to provide command and control of work activities, provide guidance and interpretation of Authorization Basis (AB) requirements, and respond to operational conditions or accidents. The minimum number of CCAs was chosen based on judgement of the minimum number of people needed to perform key duties during routine activities and operational events. As the project continues, the effort required to ensure overall safe operation of the 707/707A COMPLEX will decrease. For example, the number of activities to be authorized and supervised will decrease, the number of surveillances will decrease, the effort required to track changes in configuration will decrease, the number of unplanned events will decrease, and reporting requirements will decrease. Therefore, CCA staffing will be reduced commensurate with the reduction in CCA duties. Once all areas in the 707/707A COMPLEX are OPERATIONALLY CLEAN, the LCOs and Administrative Controls associated with building specific requirements are no longer required. Some Administrative Controls (e.g., Safety Management Programs (SMPs)) are still required. However, AC responsibilities that were assigned to the CCA could be reassigned. CCAs are not an integral part of the remaining ACs and are not required to implement their requirements. Therefore, CCAs are no longer required to support LCOs or Administrative Controls when all areas in the 707/707A COMPLEX are OPERATIONALLY CLEAN.
AC 5.1.1.c	This requirement works in conjunction with AC 5.1.1.b. A CCA must be **Available** during non-working **Shifts** to provide guidance and interpretation of AB requirements or directions for handling events. This requirement may be discontinued when all areas within the 707/707A COMPLEX are OPERATIONALLY CLEAN.
ACTION A.1 and A.2	ACTION A.1 requires the facility to restore minimum staffing, which ensures that an adequate number of personnel are **Available** to safely perform routine work activities or handle operational events. The 4-hour completion time was selected as reasonable to contact and restore staffing or to take the steps necessary to safely SUSPEND OPERATION. Action A.2 requires a suspension of operations within 4 hours of DISCOVERY that minimum staffing requirements are not met and have not been restored.

5 ADMINISTRATIVE CONTROLS

5.2 Material Management

This section contains material management controls that implement requirements or assumptions in the accident analysis. The accident scenarios were reviewed to identify controls and to determine if assumptions require other factors to be controlled. All material limits are nominal or measured values.

5.2.1 Material Management Controls

1. Containerized radioactive waste or contaminated process equipment shall not be staged/stored in Building 778. Radioactive Waste generated during Building 778 D&D may remain in Building 778 while in-process.

   Exception:
   Sealed sources; contaminated laundry, personnel protective equipment, and tools; personnel decontamination solutions/decontamination shower wastes; holdup in S-8 chainveyor and contaminated waste generated during Building 778 modifications; are not subject to this control.

R4-01

2. Up to one shipment of TRU waste containers may be staged in a shipment staging area located outside facility during the **Shift** in which transportation is planned. If the containers are not being loaded onto a truck at the end of the **Shift**, then they must be moved inside Building 707/707A periphery confinement.

R4-02

3. 10-Gallon drums containing $\geq$ 200g Pu equivalent (each) shall be handled one at a time (i.e., moved independently).

R4-02

4. Containerized TRU waste (i.e., drums, crates, standard waste boxes) shall not be stacked.

5. ADMINISTRATIVE CONTROLS

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Unauthorized radioactive waste stored/staged in Building 778.	A.1 Remove unauthorized radioactive waste from Building 778.	4 **Working Hours**
B. TRU waste containers are staged outside Building 707/707A confinement for longer than one **Shift**.	B.1 Move the waste containers back inside Building 707/707A	8 **Working Hours**
C. Two or more 10-gallon drums containing $\geq$ 200 g Pu equivalent (each) are handled together.	C.1 Suspend 10-gallon drum handling activity. **AND** C.2 Restore 10-gallon drum handling requirements by moving one drum at a time to appropriate storage/staging location.	IMMEDIATELY 8 **Working Hours**
D. Containerized TRU waste is stacked.	D.1 Unstack TRU waste containers.	8 **Working Hours**

R4-02

R4-02

5 ADMINISTRATIVE CONTROLS

SRs:

None Required

Bases:

AC 5.2.1.1 Building 778 ventilation is not filtered. Size reduction strategy in 707/707A relies upon transferring waste to the 777 size-reduction facility and receiving waste back into 707. Waste transfers through Building 778 are allowed. However, storage/staging of radioactive waste in Building 778 is not authorized. The Exception to this control allows sealed sources, contaminated laundry, contaminated personnel protective equipment and tools; personnel decontamination solutions/decontamination shower wastes and the holdup in the S-8 chainveyor to remain inside Building 778. Removal of the S-8 chainveyor or Building 778 modifications may generate contaminated waste. This waste may remain in the area until it can be packaged and removed. Building 778 is not intended to be a waste storage area.

R4-01

This control has an associated CONDITION and REQUIRED ACTION. However, it does not have a SR. It lends itself to procedural control.

AC 5.2.1.2 Waste containers must be removed from the facility for the project to progress. Drums are generally moved from the dock directly onto a truck, but SWBs are generally moved off the dock to a transportation staging area so that a forklift can efficiently load the containers onto the truck when it arrives (see Chapter 4). AC 5.2.1.2 allows up to one shipment (i.e., 30 TRU drums or 10 SWBs) of TRU waste containers to be staged outside the facility in a shipment staging area during the **Shift** in which transportation is planned. This control is not directly credited in the accident analysis, but is a good safety practice. The analysis evaluates accidents involving TRU waste containers located inside the facility (with confinement and sprinklers), outside the facility, and in areas outside confinement but still in a building structure (e.g., airlocks). This document concludes that scenarios located inside the facility are actually more acceptable than scenarios located outside the facility (e.g., facility has multiple stages of HEPA filtration, sprinklers help knockdown contaminated products of combustion, contamination plates out on interior surfaces, contamination is lofted through stack rather than released at ground level). The control limits the staging duration to one **Shift** to provide enough flexibility to accomplish the activity but limit the duration of time that containers are outside or unprotected by mitigation controls (confinement and sprinklers).

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

R4-02

AC 5.2.1.3	10-gallon drums typically contain higher MAR. The intent of this control is to limit the number of containers that can be moved or handled together and protect the MAR assumption of the accident analysis. It does not change the likelihood of spills caused by other activities (e.g., nearby vehicles, overhead loads) rather, it limits the amount of material involved in the event thereby mitigating the consequence of the event. This control has an associated CONDITION and REQUIRED ACTION. However, it does not have a SR. This AC lends itself to procedural control.
AC 5.2.1.4	Stacked TRU waste containers create different accident analysis results than non-stacked containers. Spills from stacked crates involve a greater drop distance, involve more containers, and result in higher damage ratios, source terms, and radiological dose consequences. Similarly, fires involving stacked containers involve more containers and result in higher damage ratios, source terms, and consequences. This control has an associated CONDITION and REQUIRED ACTION. However, it does not have a SR. Stacked conditions are easily recognized and correctable. The control lends itself to procedural control.

5 ADMINISTRATIVE CONTROLS

5.3 Combustible Material and Hot Work Controls

REQUIREMENT:
A program shall be established, implemented, and maintained to control and verify combustible materials and ignition sources to ensure compliance with the controls credited in the DBIO accident analysis. Combustible controls shall be implemented and surveilled by contractor procedures. The controls in AC 5.3 work in conjunction with additional Fire Protection programmatic commitments listed in SMP section 3.8, which are qualitative or not directly relied upon in the accident analysis.

5.3.1 Combustible Material Controls

Applicability:
This control applies to activities within Building 707/707A process areas, defined as areas in which radioactive materials are located (i.e., handled, staged, stored, including holdup in in-situ process equipment but not passing through in transit). It does not include natural uranium, depleted uranium, sealed sources, contaminated laundry, contaminated personal protective equipment or contaminated tools, and personnel decontamination solutions/decontamination shower wastes. These controls may be discontinued in an area when the area is OPERATIONALLY CLEAN. R4-02

Exception (a):
This control does not apply to in-process waste containers.

Exception (b):
This control does not apply to combustible materials located in designated combustible material storage rooms or areas.

Exception (c):
Mixed waste may be stored with other radiological waste as required to meet environmental regulations (e.g., RCRA, CERCLA) or to comply with NFPA code requirements (e.g., flammable liquid storage cabinets) or other code or regulatory requirements.

Exception (d):
The following items are not considered combustible or are exempt from combustible material controls:

- Fire retardant materials that meet NFPA 701, 705, or equivalent tests in configurations approved by project FPE.
- Combustible materials less than 27 ft^3 in volume within a 10 ft. diameter circle (other than polyethylene drum liners and fiberglass lids). This is intended to focus concerns away from insignificant items such as Kimwipes, tape, work control documents, and paperwork/labels attached to waste containers.
- Polyethylene drum liners inside metal drums

- Material covering openings or wrapped around contaminated components for contamination control (e.g., shrink wrap plastic, tape). Plastic wrap in a roll or pile is not exempted.
- Other materials/quantities approved by Project Fire Protection Engineering and Nuclear Safety

5.3.1.1 Waste and Fuel Package Segregation Controls

Controls to manage segregation of process components, waste containers and combustible materials shall include:

a. Waste container staging/storage areas shall be surrounded by a buffer zone (area with no combustible materials). The buffer zone separation distance shall be determined by analysis.

b. Combustible materials shall not be accumulated in amounts that exceed defined "fuel package" sizes (determined by analysis).

c. Combustible materials that meet defined fuel package sizes shall be separated from adjacent fuel packages and process components with radioactive holdup as determined by analysis.

5.3.1.2 Combustible/Flammable Liquids

Combustible/flammable liquid containers (e.g., 4-liter bottles, 55-gallon drums) shall be:

a. segregated from other types of waste containers;

b. surrounded by a buffer zone (area with no combustible materials, waste containers, or process components) or fire resistant walls:

5.3.1.3 Permanent Sprinkler System Deficiency Controls

The following controls may be implemented in areas of permanent sprinkler deficiencies as allowed by LCO 3.2:

a. The area affected by each sprinkler system deficiency or impairment (area where combustible materials must be controlled in order to not challenge the sprinkler system) shall be identified (e.g., paint or mark floor or wall, post area, etc.). R4-02

b. Combustible material shall not be stored or staged in areas affected by sprinkler system deficiencies.

c. Only process components and/or waste containers generated in the AFFECTED AREA shall be staged/stored in the AFFECTED AREA, and they shall be removed as soon as practicable.

5.3.1.4 Periphery Confinement Barrier Deficiency Controls

a. The area affected by a degraded periphery confinement barrier (area where combustible materials must be controlled in order to not challenge the barrier) shall be identified within the periphery confinement (e.g., paint or mark floor or wall, post wall or entrances) to preclude storing/staging combustible materials. R4-02

b. Combustible material shall not be stored or staged in areas affected by periphery confinement barrier deficiencies.

5 ADMINISTRATIVE CONTROLS

CONTROLS

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. A combustible control in AC 5.3.1 is not met.	A.1 Suspend hot work in the AFFECTED AREA.	IMMEDIATELY
	AND	
	A.2.1 Restore compliance with the combustible controls.	8 **Working Hours**
	OR	
	A.2.2 Establish a fire watch.	8 **Working Hours**

SURVEILLANCE REQUIREMENTS(SRs):		FREQUENCY
SR 5.3.1.1	Inspect the buffer zone around waste container staging/storage areas inside confinement. ACCEPTANCE CRITERIA: Verify that there are no combustible materials in waste container storage area buffer zones.	Weekly
SR 5.3.1.2	Inspect operational area (inside periphery confinement barriers) and verify that combustible material controls are met. ACCEPTANCE CRITERIA: a. Combustible materials do not exceed defined "fuel package sizes". b. The separation distance between adjacent "fuel packages" is maintained. c. The separation distance between "fuel packages" and process components is maintained.	Weekly

5 ADMINISTRATIVE CONTROLS

SURVEILLANCE REQUIREMENTS(SRs):		FREQUENCY
SR 5.3.1.3	Inspect combustible/flammable liquid containers (e.g., 4-liter bottles, 55-gallon drums). ACCEPTANCE CRITERIA: a. Combustible/flammable liquid containers are segregated from other types of waste containers b. There are no combustible materials, waste containers, or contaminated process components in a buffer zone.	Weekly
SR 5.3.1.4	Inspect areas with permanent sprinkler deficiencies or impairments. ACCEPTANCE CRITERIA: a. Verify that the areas affected by permanent sprinkler deficiencies are clearly identified. b. Verify that there are no combustible materials in the areas affected by sprinkler deficiencies. c. In areas with permanent sprinkler deficiencies, rendering sprinklers not OPERABLE, verify that only contaminated waste generated in the AFFECTED AREA is staged/stored in the AFFECTED AREA.	Weekly
SR 5.3.1.5	Inspect areas with permanent periphery confinement barrier deficiencies. ACCEPTANCE CRITERIA: a. Verify that areas affected by permanent periphery confinement barrier deficiencies are clearly identified. b. Verify that there are no combustible materials in the areas affected by periphery confinement barrier deficiencies	Weekly

R4-02

5 ADMINISTRATIVE CONTROLS

Bases:

AC 5.3.1 Overview

The accident analyses credits combustible material controls with reducing the frequency of medium, large, and major fires. There are many factors associated with fire safety (e.g., type of work being performed, amount of combustible material, properties of combustible material, location of combustible material, proximity of components with holdup, proximity of waste containers, sprinklers deficiencies, periphery barrier deficiencies). The frequency of smaller fires is reduced primarily by controlling ignition sources and keeping combustibles away from ignition sources. The frequency of larger fires is further reduced by minimizing propagation, and minimizing the total amount of combustible material in an area. The consequences of fires are reduced by segregating radiological material from combustible material. The fire scenarios that credit combustible controls involve gloveboxes and waste containers.

Combustible materials, radiological materials, and fire ignition sources all come together in areas where decommissioning activities are being performed. One of the concerns associated with fire scenarios is commingling radiological material (e.g., holdup in process components, waste containers) and combustible materials. With this in mind, the accident analysis credits controls that would reduce the risk of fires via segregation requirements for waste containers, combustible/flammable liquids containers, and combustible materials. These requirements are covered in AC 5.3.1.1. and 5.3.1.2.

Separation may be achieved by fire barriers, such as room or module walls or other FPE-approved fire shields, or by administratively maintaining spacing. Combustible materials are not to be co-mingled with radioactive waste containers or process components. Process components means gloveboxes, chainveyors, or tanks, containing significant quantities of radiological material. Containerized combustible/flammable liquids must not be co-mingled with other combustible materials, or radioactive waste except as required to meet environmental regulations (e.g., RCRA, CERCLA) or to comply with NFPA code requirements (e.g., flammable liquid storage cabinets) or other code or regulatory requirements..

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.3.1 Overview (continued)

The accident analysis assumes that sprinklers and periphery confinement barriers are capable of performing their intended functions. However, the logistics of dismantling the facility require some sections of sprinklers and confinement barriers to be impaired. Therefore, AC 5.3.1.3 and AC 5.3.1.4 contain administrative controls for safely handling sprinkler and periphery confinement barrier deficiencies.

Discontinuation of AC 5.3.1 controls:
Once an area is OPERATIONALLY CLEAN, the radiological hazards are significantly reduced and combustible materials will be controlled in accordance with site-wide Fire Protection requirements. The accident analysis supports discontinuing combustible control Administrative Controls when an area is OPERATIONALLY CLEAN. Once an area is OPERATIONALLY CLEAN, additional controls above and beyond the Fire Protection SMP are no longer required.

AC 5.3.1

Applicable Areas:

The Combustible Material Controls apply to activities within Building 707/707A process areas. The process areas for Building 707/707A are those areas in which radioactive materials are located inside periphery confinement as described in LCO 3.1.1 and DF 6.1. Radioactive materials are defined as Special Nuclear Material (enriched uranium, uranium-233, uranium-235, or plutonium), americium, or neptunium in quantities of one gram or more. It does not include natural uranium, depleted uranium, sealed sources, contaminated laundry, personal protective equipment or tools. Outdoor areas are subject to Site Safety Analysis Report (SAR) analysis and controls, therefore, Building 707 TSR combustible material storage controls are not applicable outside of Building 707. The FHA analyzes the impact of fires from surrounding facilities. Radioactive material controls in Building 778 limit the radiological dose consequences of fires which expose Building 778. Therefore, no combustible controls outside Building 707/707A are warranted. Site SAR controls, related to storage of radioactive waste outdoors may apply to outdoor areas in the vicinity of Building 707.

R4-02

Exception (a):

In-process containers that are not sealed, are not subject to combustible segregation controls. These containers may be moved around the facility where needed until filled, at which time, they will be sealed with lids.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.3.1. (continued)

Exception (b):

Combustible materials located in designated combustible material storage rooms or areas are exempt from fuel package size and segregation controls. Designated fuel package storage rooms or areas shall be approved by Project Fire Protection Engineering and must be segregated from radioactive waste and process components.

Exception (c):

Mixed waste (such as combustible oils contaminated with radioactive material) may be stored in a designated storage area (e.g., RCRA/CERCLA permitted area; flammable liquid storage cabinet, etc.) shared with other radiological waste as required to meet environmental regulations, NFPA code requirements, or other code and/or regulatory requirements. Nuclear Safety and Project Fire Protection Engineering should approve such storage arrangements.

Exception (d):

Some quantity of combustibles is necessary in order to conduct normal operations and decommissioning activities. Combustible materials in quantities less than a fuel package and the specific combustibles listed do not constitute combustible loading capable of sustaining and propagating a fire that could challenge the accident analysis or the facility fire barriers. It is possible that the amount of combustible material needed to perform a planned decommissioning activity will exceed defined fuel package sizes. Exception (d) allows combustible materials to exceed fuel package restrictions if the materials are approved by Project Fire Protection Engineering (PFPE) and Nuclear Safety. Project Fire Protection Engineering shall determine the fire type and fire size (approximate wattage) and specify additional protective measures if necessary. Nuclear Safety shall consider fire type, fire size, and the configuration of hazards in the work area when comparing the proposed activity to previously analyzed accidents.

Exceptions a – d apply to all subsections of AC 5.3.1.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.3.1.1

AC 5.3.1.1 provides buffer zones (i.e., separation distances) between waste container staging areas and combustible materials. *The Fire Hazards Analysis Building 707 Complex* (FHA) (Ref. 6) or other analyses provide the technical basis for the separation distance. The buffer zone separation distance will be selected such that a burning "fuel package" outside the buffer zone will not involve waste containers. No buffer zone or separation distance is required when walls or shields of non-combustible or fire-resistive construction protect containers. The buffer zone helps prevent fire propagation between combustible materials and waste container staging areas. It also helps prevent fire propagation between waste container staging areas and process components.

A waste container staging area is defined as an area with two or more full waste containers located next to each other (with $\leq$5 foot separation). This control does not apply to in-process waste containers.

AC 5.3.1.2

AC 5.3.1.2 minimizes the fire risk associated with storage of combustible/flammable liquids. Such liquids shall be segregated from radioactive wastes as prescribed by the FHA or as evaluated and documented by PFPE. Exception (c) allows mixed waste (such as combustible liquids contaminated with quantities of radioactive material) to be stored in a designated storage area (e.g., RCRA, CERCLA permitted area, flammable liquid storage cabinet, etc.) shared with other radiological waste as required to meet environmental regulations or NFPA or other code or regulatory requirements. Liquids that are not predominantly combustible or flammable, but may contain some combustible or flammable components in the mixture (e.g., water contaminated with oil) are not considered combustible/flammable liquids and are not subject to AC 5.3.1.2.

Designated flammable/combustible liquid storage areas (such as Rooms 135 E and F, when adequate sprinkler flow is ensured) may contain quantities of flammable/combustible liquids as evaluated in the FHA or as evaluated and documented by PFPE. These designated areas ensure separation from, and prevent fire propagation to, significant quantities of radioactive waste. No buffer zone or separation distance is required when walls or shields of non-combustible or fire-resistive construction protect the combustible liquid containers. Segregating combustible liquid containers from other types of waste containers or process components, minimizes the co-mingling of radiological material and combustible material. A berm in Room 196 provides additional containment in the event of leaking containers in this storage area. Likewise, the space beneath the platforms in Rooms 135E and 135F act as catch basins to contain liquids that may leak from containers stored in these rooms.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.3.1.3

AC 5.3.1.3 supports the exception in LCO 3.2 which allows planned activities that permanently render individual sprinklers or sections of a sprinkler system inoperable to be managed with administrative controls. The administrative controls for deficient sprinklers include:

- Identify the area affected by sprinkler system deficiencies (e.g, paint or mark the floor or wall, post area, etc.) as a means of configuration control as well as a means of increasing worker awareness of sprinkler deficiences and the need for combustible controls.
- Combustible material controls that minimize the probability and size of fires in the affected area.
- Waste staging/storage controls that minimize the quantity of waste staged/stored in the AFFECTED AREA to that generated in the AFFECTED AREA. Waste generated in the area shall be removed as soon as practicable. Waste containers, contaminated equipment, and combustible material can still be moved through the controlled area.

Additionally, engineered controls should be considered to minimize the impact of ceiling tile removal on sprinkler operability. For example, draft curtains shall be used, where practical, to retain heat from a fire near sprinkler heads rather than let the heat escape into the open space above the hanging tiles, when OPERABILITY of sprinklers is credited.

For planned activities that permanently render individual sprinklers or sections or entire sprinkler systems inoperable, LCO 3.2 allows the controls of AC 5.3.1.3 to remain in place for the remaining life of the facility.

AC 5.3.1.4

AC 5.3.1.4 supports the Exception in Design Features Section 6.1. The Exception allows periphery confinement barrier deficiencies to be handled with administrative controls. The administrative controls in AC 5.3.1.4 require identification of deficient periphery confinement barriers and removal of combustible materials from areas with periphery confinement barrier deficiencies such that the barrier integrity is not challenged by fire. The facility can follow the administrative controls for the remaining life of the facility.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

CONDITION A and REQUIRED ACTIONS	CONDITION A and the associated REQUIRED ACTIONS apply to all combustible controls in AC 5.3.1. If Condition A is entered, the facility must suspend hot work in the AFFECTED AREA. This effectively reduces the likelihood of fires initiated by decommissioning activities. The facility must also restore compliance with the combustible controls or establish a fire watch within 8 **Working Hours**.
SR 5.3.1.1	SR 5.3.1.1 periodically verifies that the requirements in AC 5.3.1.1 are being met. The surveillance ensures that there are no combustible materials in buffer zones surrounding waste container staging/storage areas. Refer to the basis for AC 5.3.1.1 for additional discussion on the buffer zone requirement.
SR 5.3.1.2	SR 5.3.1.2 periodically verifies that the requirements in AC 5.3.1.1 are being met. The surveillance ensures that combustible materials do not exceed defined "fuel package" sizes and that separation distances between adjacent fuel packages and contaminated process components are maintained. The contaminated process components specifically included in this surveillance are in-situ and decommissioned gloveboxes, chainveyors, or tanks with radiological holdup . Refer to the basis for AC 5.3.1.1 for additional discussion on fuel package requirements.
SR 5.3.1.3	SR 5.3.1.3 periodically verifies that the requirements of AC 5.3.1.2 are being met. The surveillance ensures that combustible/flammable liquid containers are segregated from other types of waste and combustible material, waste containers, or process components. The process components specifically included in this surveillance are in-situ and decommissioned gloveboxes, chainveyors, or tanks, with radiological holdup. Individual containers of combustible/flammable liquids that are packaged in drums do not need to be inspected. Incompatible materials are not packaged together in drums, so only the outer container needs to be inspected.
SR 5.3.1.4	SR 5.3.1.4 periodically verifies that combustible material is not stored or staged in areas affected by sprinkler system deficiencies. The AFFECTED AREA must be identified. This may be accomplished by painting or marking the area of the floor beneath the deficient sprinklers, installation or draft curtains around the deficient area, posting signs, or other means to increase worker awareness and enhance

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

SR 5.3.1.4 (continued)	compliance to combustible controls. In areas where ceiling tiles are permanently removed (making sprinklers not OPERABLE) only waste generated in the area and tools and materials necessary to do the job are allowed to be staged in the area. This prevents accumulation of excess contaminated waste in areas where the preferred engineered mitigation features (sprinklers) are not available.
SR 5.3.1.5	SR 5.3.1.5 ensures compliance to AC 5.3.1.4 Periphery Confinement Barrier Deficiency Controls inside Building 707/707A. AC 5.3.1.4 supports the exception in Design Features Section 6.1 that allows periphery confinement barrier deficiencies to be handled with administrative controls. The surveillance ensures that the controls for permanent periphery barrier deficiencies are implemented. Permanent deficiencies are those that will not be repaired to restore the credited integrity of the barrier prior to facility demolition. AFFECTED AREAS should be clearly defined. These are the areas of the barrier that are deficient, and the area that should be kept clear of combustibles. This may be accomplished by painting or marking the walls and floor, marking floor plans, posting signs, or other means to increase worker awareness and enhance compliance to combustible controls.

5 ADMINISTRATIVE CONTROLS

5.3.2 Hot Work Controls

Hot Work shall be conducted in accordance with Hot Work fire prevention precautions.

Applicability: This requirement is applicable to Buildings 707/707A process areas (inside periphery confinement barriers). This requirement may be discontinued when an area is OPERATIONALLY CLEAN.

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Hot Work is not performed in accordance with Hot Work fire prevention precautions.	A.1 Suspend Hot Work in the AFFECTED AREA.	IMMEDIATELY
B. The facility is notified that Fire Department staffing is inadequate to respond to a fire.	B.1 Suspend Hot Work in the facility.	4 hours

SRs:

None Required

5 ADMINISTRATIVE CONTROLS

Bases:

AC 5.3.2	**Overview:** AC 5.3.2 makes a commitment to the contractor Hot Work program for controlling Hot Work ignition sources. The contractor procedure implements a comprehensive set of fire prevention precautions when performing operations that involve open flames or produce heat and/or sparks. The accident analysis credits Hot Work controls, in conjunction with combustible material controls, with reducing the frequency of small, medium, large, and major fires. The frequency of smaller fires is reduced primarily by controlling ignition sources and keeping combustibles away from ignition sources. Controlling combustible material further reduces the frequency of larger fires. **Applicable areas:** Hot Work controls are applicable to Buildings 707/707A process areas, defined as areas inside periphery confinement barriers in which radioactive materials are located (e.g., in situ, handled, staged, stored, but not passing through in transit). This control may be discontinued in any area determined to be OPERATIONALLY CLEAN, but Hot Work will continue to be performed in accordance with contractor procedures and the Fire Protection Safety Management Program (Chapter 3).
ACTION A.1	CONDITION A is entered if Hot Work is being performed outside a permitted area, without a Hot Work permit, or if the fire prevention precautions in the Hot Work Permit are not being followed. If Condition A is entered, the facility shall suspend Hot Work in the AFFECTED AREA. This reduces the likelihood of a fire associated with the improper Hot Work activities.
ACTION B.1	This action is not associated with a control credited in the accident analysis, but it is a good management practice. Suspending Hot Work when Fire Department is unavailable simply reduces the likelihood of a fire while the Fire Department is unavailable.

5 ADMINISTRATIVE CONTROLS

5.3.3 Material Combustibility Controls

1. Fixative coatings applied to contaminated components shall be approved for use in accordance with contractor procedures.

   Applicability: This requirement is applicable to Building 707/707A process areas (inside periphery confinement barriers) in which radioactive materials are located (e.g., in-situ, handled, staged, stored, but not passing through in transit). This requirement may be discontinued when an area is OPERATIONALLY CLEAN.

2. Contamination control enclosures (e.g., size reduction tents) shall be constructed of fire retardant material.

   Applicability: This requirement may be discontinued in an AFFECTED AREA when the AFFECTED AREA is OPERATIONALLY CLEAN.

   Exception: Enclosures made of non-fire retardant materials may be used if they are controlled as combustible material and Hot Work is prohibited in the immediate area.

3. Radioactive waste shall not be stored or packaged in wooden waste crates.

   Applicability: This requirement is applicable at all times in Building 707/707A.

   Exception: Non-standard size wood waste crates containing radioactive waste that existed in the Building 707/707A prior to approval of this DBIO are exempt.

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. A material combustibility control in AC 5.3.3 is not met.	A.1 Suspend Hot Work in the AFFECTED AREA. **AND**	IMMEDIATELY
	A.2.1 Restore compliance with specific material control. **OR**	8 **Working Hours**
	A.2.2 Establish Fire Watch	8 **Working Hours**

5 ADMINISTRATIVE CONTROLS

SRs:

None Required

Bases:

AC 5.3.3.1	Coatings may be used to fix radioactive contamination inside Zone I/IA enclosures or other equipment. The accident analysis does not require fixative coatings. However, if fixative coatings are used, they must be non-combustible so that they do not add to combustible loading or increase airborne release fractions from what is assumed in the accident analysis. Combustibility rating data from industry standard tests (e.g., ASTM E-84, NFPA 255), other criteria cited by contractor procedures (e.g., RFETS Engineering Standard SF-100; Ref. 13), or specific analysis may determine if a coating may be used. Fixative coatings as specified in contractor procedures (e.g.,flame spread index below 25) will not significantly affect combustible loading or increase airborne release fractions from what was assumed in the accident analysis. The accident analysis assumes that the same amount of MAR will be involved in a fire whether or not a component is coated because the fixative coating will not continue to burn beyond the area of external flame impingement. If the facility enters Condition A due to noncompliance with this control, compliance can be restored by removing the combustible fixative or applying a non-combustible coating over the combustible coating.
AC 5.3.3.2	The accident analysis models size reduction tents as fire retardant material in accordance with NFPA 701 or 705. Tents made of fire retardant material do not readily ignite or propagate fire and do not significantly impact fuel loading. Use of non-fire retardant plastic could change the likelihood of a fire, change how fire is propagated by a size reduction tent, increase the amount of fuel in an area, or change how much radioactive material is involved in a fire. Therefore, AC 5.3.3.2 requires that contamination control enclosures be made of fire retardant material. If the facility enters Condition A due to noncompliance with this control, compliance can be restored by treating the material as combustible material and meeting the applicable requirements (e.g., AC 5.3.1)
AC 5.3.3.3	The accident analysis assumes that only metal waste containers are used in the 707/707A Complex. AC 5.3.3.3 ensures that new wooden crates or wooden waste crates that were historically used at Rocky Flats cannot be introduced in the 707/707A Complex for packaging radioactive waste. Pre-existing wooden crates are exempted until they can be re-packaged or removed from the complex.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

ACTIONS
A.1 and A.2

CONDITION A is entered if any of the material combustibility controls in AC 5.3.3 are not met. If Condition A is entered, the facility shall suspend Hot Work in the AFFECTED AREA and then restore compliance with the controls or establish a fire watch within 8 hours. This reduces the likelihood of a fire in the vicinity of fixatives, enclosures, or waste containers that do not meet combustibility assumptions in the accident analysis.

Legacy wooden waste crates that contain radioactive waste remaining in the 707/707A Complex prior to the approval of this DBIO are exempted from this control.

5 ADMINISTRATIVE CONTROLS

5.3.4 Flammable/Explosive Gas Controls

Acetylene gas cylinders in Building 707/707A must be $\leq$ 130 ft.^{3} each. In Module K, acetylene gas cylinders must be $\leq$ 48 ft^3 each.

Use or storage of other flammable/explosive gases (e.g., propane) or volumes of acetylene greater than those specified above shall be analyzed on a case-by-case basis using the USQD Process.

Applicability: AC 5.3.4 may be discontinued in an AFFECTED AREA when the AFFECTED AREA is OPERATIONALLY CLEAN.

Actions:

Condition	Required Action	Completion Time
A. Flammable/explosive gases (e.g., oxyacetylene, propane) located in unauthorized area.	A.1 Suspend Hot Work in the AFFECTED AREA.	IMMEDIATELY
	AND	
	A.2.1 Remove flammable/explosive gases from the area.	8 **Working Hours**
	OR	
	A.2.2 Establish a fire watch.	8 **Working Hours**

Surveillance Requirements:

None Required

5 ADMINISTRATIVE CONTROLS

Bases:

AC 5.3.4	The accident analysis analyzed accidents involving flammable/explosive gases in areas where they are expected to be used (Section 6.2.3). Oxyacetylene cutting torches will be used for cutting security cages, utilities, lockers, railings, etc. throughout the 707/707A COMPLEX. The areas where flammable/explosive gases are expected to be used were analyzed in the PHA. AC 5.3.4 states that use of other flammable/explosive gases or volumes of acetylene other than those listed in the AC shall be analyzed on a case-by-case basis. If this option is used, flammable/explosive gases must be controlled through work control documents and the Nuclear Safety evaluation shall compare the frequency (depends on the type of gas, leak/release, and initiators) and consequences (depends on remaining MAR, LPF, etc.) of postulated accidents against previously analyzed explosion scenarios.
ACTIONS A.1 and A.2	CONDITION A is entered if acetylene gas cylinders exceed AC 5.3.4 size restrictions, or the USQD process has not evaluated a greater volume of acetylene, or a different type of flammable/explosive gas that is located in Building 707/707A, has not been evaluated through the USQD process. If Condition A is entered, the facility shall suspend Hot Work and then remove the unauthorized flammable/explosive gas or establish a fire watch within 8 hours. This reduces the likelihood of an explosion associated with the unauthorized flammable/explosive gas.

5 ADMINISTRATIVE CONTROLS

5.4 Safety Management Programs (SMPs)

This section contains commitments to SMPs. These requirements do not directly support assumptions in the accident analysis, but recognize the discipline imposed by the programs. In addition to worker safety, the cumulative affect of the programmatic details is important to facility safety and is an integral part of the facility safety envelope. This section satisfies Section 5.5.X.3 of DOE-STD-3009-94, which requires that facilities include a commitment to establish, maintain, and implement SMPs.

5.4.1 SMP Requirements

a. The SMPs, as described in Chapter 3, shall be established, implemented, and maintained.

b. Facility Management shall correct SMP non-compliances in accordance with the requirements of the specific SMP.

c. Facility Management shall provide tracking and trending data to the site program owner in accordance with the requirements of the specific SMP.

Applicability: These requirements are applicable at all times.

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The overall safety function of an SMP (identified in the SMP description) is lost due to a programmatic failure.	A.1 Notify DOE RFFO of the programmatic failure. **AND** A.2 Determine the safety significance of the programmatic failure. **AND** A.3 Identify and implement corrective actions.	7 days 60 days 60 days

SRs:

None Required

5 ADMINISTRATIVE CONTROLS

Bases:

AC 5.4.1.a	This AC makes a commitment to SMPs. The commitment to each program encompasses a large number of details that are more appropriately covered in program documents. The cumulative effect of these details is recognized as being important to facility safety, which is the rationale for a top-level programmatic commitment becoming part of the safety basis. The discipline imposed by SMPs goes beyond supporting assumptions in the hazard analysis and is an integral part of DEFENSE-IN-DEPTH.
AC 5.4.1.b	This AC requires that Facility Management correct SMP non-compliances in accordance with the requirements of the specific SMP. Non-compliances in a program do not constitute a programmatic failure (as described in CONDITION A) or violate the DBIO safety basis.
AC 5.4.1.c	This AC requires that Facility Management provide tracking and trending data to the site program owner in accordance with the specific SMP.
ACTIONS A.1, A.2 and A.3	To enter Condition A, a programmatic failure must involve multiple deficiencies that are classified as significant noncompliances under the Price-Anderson Amendments Act in multiple areas of the program such that the overall safety function of an SMP identified in Chapter 3 is lost or significantly degraded. If Condition A is entered, the facility shall notify DOE of the programmatic failure within 7 days, and, determine the safety significance of the programmatic failure and identify and implement corrective actions within 60 days.

5 ADMINISTRATIVE CONTROLS

5.5 Operationally Clean

This section contains requirements for making OPERATIONALLY CLEAN determinations and for periodically verifying that the areas remain OPERATIONALLY CLEAN.

5.5.1 Operationally Clean Requirements

1. DOE-RFFO shall be notified at least 7 calendar days prior to declaring an area OPERATIONALLY CLEAN and discontinuing TSR requirements. This may be accomplished by providing documented notification to the DOE Facility Representative.

2. An area may be declared OPERATIONALLY CLEAN when the following conditions are met:

   a. Contaminated process equipment and components (*e.g.*, tanks, piping, gloveboxes, B-boxes, hoods, contaminated ductwork, contaminated portions of filter plenums, and contaminated HEPA filters) have been dismantled, packaged as waste, and removed from the AFFECTED AREA.

      Exception: The following components may remain:

      1) Contaminated components that must be removed as part of structural decontamination.
      2) Components that meet Surface Contaminated Object (SCO) waste requirements.
      3) Contaminated utilities or support systems that are required for worker safety or to provide service to other areas.

   b. No containerized radioactive waste is stored or staged in the AFFECTED AREA.

      Exception:

      1) Waste generated after an area is declared OPERATIONALLY CLEAN may be stored or staged in the area where it was generated.

Actions:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. OPERATIONALLY CLEAN requirements are not maintained.	A.1 SUSPEND OPERATIONS in the AFFECTED AREA. **AND** A.2 Restore OPERATIONALLY CLEAN requirements.	2 hours 8 **Working Hours**

5 ADMINISTRATIVE CONTROLS

SURVEILLANCE REQUIREMENTS(SRs):

SURVEILLANCE REQUIREMENTS(SRs)		FREQUENCY
SR 5.5.1	Verify that OPERATIONALLY CLEAN requirements are maintained: ACCEPTANCE CRITERIA: a. There are no contaminated process components (*e.g.*, tanks, piping, gloveboxes, B-boxes, hoods, contaminated ductwork, contaminated portions of filter plenums, and contaminated HEPA filters) in the area, except for the items specified when the area was declared OPERATIONALLY CLEAN. b. Only waste containers generated in an OPERATIONALLY CLEAN area are stored or staged in the OPERATIONALLY CLEAN area. **Applicability**: This surveillance may be discontinued in an area once final surveys are complete and access is controlled (e.g., doors are locked).	Weekly

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5 ADMINISTRATIVE CONTROLS

Bases:

AC 5.5.1.1	Notifying DOE prior to declaring an area OPERATIONALLY CLEAN is not credited in the accident analysis. However, achieving OPERATIONALLY CLEAN is a major milestone where TSRs can be discontinued. AC 5.5.1.1 commits to notify DOE at least 7 calendar days prior to declaring an area OPERATIONALLY CLEAN. This allows DOE adequate time to evaluate the facility status and be involved in the OPERATIONALLY CLEAN determination. The notification should identify the area that will be declared OPERATIONALLY CLEAN and list the TSR requirements that the facility plans to discontinue in that area.
AC 5.5.1.2	Declaring an area OPERATIONALLY CLEAN is not a control credited in the accident analysis, but it is a major milestone where TSRs can be discontinued. AC 5.5.1.2 contains the criteria that define when an area can be declared OPERATIONALLY CLEAN. OPERATIONALLY CLEAN is the point in the closure process where as much contaminated process equipment as reasonable has been removed from an area.
AC 5.5.1.2.a	In order to minimize the risk before discontinuing TSR requirements, AC 5.5.1.2.a requires that contaminated process equipment and components have been dismantled, packaged as waste, and removed from the area. This minimizes risk by removing as much contamination as reasonable. However, some components must remain due to the logistics of dismantling the facility or for safety reasons. These items are discussed in the Exceptions. Exception (1) allows contaminated components that are imbedded in the building structure to remain. This exception is intended to cover components such pipe and duct stubs that are imbedded in the structure. These components are generally small, made of metal, and are capped or sealed when abandoned. Removal of these components generally requires holes to be cut in periphery confinement barriers, fire barriers, or load-bearing structures. These components will be removed during structural decontamination.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.5.1.2.a	Exception (2) allows components that meet SCO waste requirements to remain. This is intended to cover oversized SCO waste components (e.g., tanks, plenums) that are too large to remove through existing doors. These items will be removed after large openings can be made in the structure. LLW or SCO items pose little radiological risk such that lifting TSR controls will not challenge unmitigated accident consequences analyzed in the accident analysis. Exception (3) allows contaminated utilities or support systems to remain if they are required for worker safety or to provide service to other areas; for example, a section of Health Physics Vacuum line running through a clean area to service a waste processing area. These items will have to be removed before performing final surveys.
AC 5.5.1.2.b	In order to minimize the risk, all radioactive waste containers must be removed from an area before it is declared OPERATIONALLY CLEAN. Exception (1) does not allow waste containers to remain in an area at the time it is declared OPERATIONALLY CLEAN. It allows waste generated after an area is OPERATIONALLY CLEAN to be stored or staged in the area where it was generated until the waste item can be removed, or until an in-process container can be sealed and promptly removed. This does not preclude moving waste containers through OPERATIONALLY CLEAN areas.
ACTIONS A.1 and A.2	CONDITION A is entered if an area that has been declared OPERATIONALLY CLEAN no longer meets OPERATIONALLY CLEAN requirements. If Condition A is entered, the facility shall SUSPEND OPERATIONS in the AFFECTED AREA within 2 hours. This effectively reduces the likelihood of an operational accident in an area while it does not comply with OPERATIONALLY CLEAN requirements. The facility must also remove contaminated process components or unauthorized waste containers to restore the area to meet Operationally Clean requirements within 8 **Working Hours**.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

SR 5.5.1

This surveillance verifies that OPERATIONALLY CLEAN requirements are maintained in areas that have been declared OPERATIONALLY CLEAN.

Ultimately, areas that have been declared OPERATIONALLY CLEAN will be demolished. Therefore, the surveillance contains criteria for when this surveillance can be discontinued. This surveillance may be discontinued in an area when final surveys are complete and access is controlled (e.g., doors are locked). At this point the area is not readily accessible and continued surveillances are not necessary.

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5 ADMINISTRATIVE CONTROLS

5.6 Configuration Management

This section contains requirements for tracking and managing configuration changes as equipment, systems, and structures are shut down, dismantled, and removed from the facility.

5.6.1 Configuration Management Requirements

1. Operations Documentation

   Documentation needed for Configuration Control Authorities to manage the facility (e.g., authorize work, identify safety equipment status, define AFFECTED AREAS) shall be maintained current in accordance with the Conduct of Operations Program. Configuration management information shall include:

   a. Safety and Support System Operating Status
   b. LCO/AC Surveillance Status
   c. System Configuration Information
      System configuration information shall identify the systems, structures, components, and support systems providing safety functions. The systems to be tracked shall include:
      - HVAC Systems
      - Sprinkler Systems
      - Plenum Deluge System
      - Criticality Accident Alarm System
      - Electrical Power System
      - LS/DW System
   d. Facility Condition Information
      Facility configuration information should include information needed to effectively manage the facility and update surveillances. Examples include:
      - Permanent Sprinkler System Deficiencies
      - Permanent Periphery Confinement Barrier Deficiencies
      - Permanent Inadequate CAAS Annunciation Areas
      - OPERATIONALLY CLEAN Areas

2. Surveillance Procedures

   Procedures used to verify TSR SRs shall be updated to match the current facility configuration prior to performing the surveillance. Surveillance procedures shall be formally revised or updated as determined by facility management.

5 ADMINISTRATIVE CONTROLS

3. Non-LCO Equipment Maintenance and Removal

   A program shall exist to test, surveil, and maintain systems and functions/components listed below. In addition, DOE-RFFO shall be notified at least 7 calendar days prior to permanently, intentionally shutting down or removing systems or functions/components listed below. This may be accomplished by providing documented notification to the DOE Facility Representative.

Systems

- Diesel Generators (diesel generators EGEN-1 and EGEN-2)
- UPS System

System Functions/Components

Confinement Pressure Differential

- Standby or Redundant Exhaust Fans
- Interlocks

Sprinklers

- Waterflow Alarms / Fiber-optic and SIO Loop (i.e., Fire Department notification)

Plenum Deluge

- Heat Detectors / Fire Alarm Control Panels / Fiber-optic Loop (i.e., automatic actuation and Fire Department notification)

Criticality Accident Alarm System

- Criticality Alarm Panel Batteries
- LS/DW Batteries
- Remote Alarms / SIO Loop

5 ADMINISTRATIVE CONTROLS

4. Safety Equipment Replacement

DOE-RFFO shall be notified a least 7-calendar days prior to replacing existing equipment performing safety functions or essential support equipment listed in LCO Bases with temporary equipment (i.e., not like-for-like). The following are identified as essential support equipment:

- Electrical Power (LCO 3.1.1 and 3.4)
- Domestic Cold Water System (LCO 3.2 and 3.3)
- LS/DW System (LCO 3.4)

This may be accomplished by providing documented notification to the DOE Facility Representative.

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Actions:

None

SRs:

None Required

Bases:

AC 5.6.1.1	Maintaining accurate Operations Documentation is not a credited control in the accident analysis, but it is an integral part of the facility safety envelope. This Administrative Control applies to temporary and permanent systems and is implemented through the Conduct of Operations SMP. Operating status and configuration information will be updated as changes are encountered. Status information may be obtained from various sources (e.g., Plan of the Day, walkdowns, CCA notification steps in IWCP, communications with Foreman). Issues that are significant enough to affect safe operations (e.g., authorizing work while operations are suspended, missing surveillances) will challenge other TSR requirements. Therefore, there are no CONDITIONS, REQUIRED ACTIONS, or SURVEILLANCES associated with AC 5.6.1.1.
AC 5.6.1.2	Maintaining accurate Surveillance Procedures is not a credited control in the accident analysis, but it is an integral part of the facility safety envelope. This requirement is implemented through the Document Management Program SMP. Surveillance Procedures shall be updated to match the facility configuration. Surveillance procedures will be formally updated as determined by facility management. Issues that are significant enough to affect safe operations (e.g., inadequate surveillance) will challenge other TSR requirements. Therefore, there are no CONDITIONS, REQUIRED ACTIONS, or SURVEILLANCES associated with AC 5.6.1.2.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.6.1.3 Maintaining non-LCO systems or components is not a credited control because these systems are not required to meet LCO requirements or assumptions in the accident analysis. However, these systems or components contribute to reliability, allow automatic operation, or improve ease of operation of safety systems. Therefore, AC 5.6.1.3 commits to maintaining these systems and notifying DOE before they are removed from service.

The list of systems and functions/components in AC 5.6.1.3 are taken directly from LCO Bases. Functions/components listed in AC 5.6.1.3 are discussed in the Bases for LCO SRs. Although these items are not required by the accident analysis, they do provide additional layers of defense. Therefore, they will be maintained as long as reasonable into the decommissioning process.

Test, Surveil, and Maintain: AC 5.6.1.3 commits to a test, surveillance, and maintenance program, which encompasses a large number of details that are more appropriately covered in program documents. The functionality of the systems or components will be periodically verified in accordance with contractor procedures. The Surveillance Requirements and frequencies may be identified in program requirements or in the surveillance procedures. If problems are identified, they will be corrected or repaired in accordance with contractor procedures.

Removal Notification: The point at which the facility decides to shut down each system or function/component depends on many factors. Rather than predefining when each item will be shut down, AC 5.6.1.3 commits to notify DOE at least 7 calendar days prior to shutting down or removing any of the listed systems or functions/components. This allows the facility to more clearly define the status of the facility when each item is removed and keeps DOE involved in the decommissioning process. The notification should include facility status at the time of the removal, impact on safety functions, and technical justification for removing the system or function.

Issues that are significant enough to affect safe operations will challenge other TSR requirements. Therefore, there are no CONDITIONS, REQUIRED ACTIONS, or SURVEILLANCES associated with AC 5.6.1.3.

5 ADMINISTRATIVE CONTROLS

Bases: (continued)

AC 5.6.1.4 Notifying DOE prior to replacing equipment performing safety functions (e.g., replacing existing fans with airmovers) or replacing essential support equipment listed in LCO Bases (e.g., replacing a building transformer with a temporary transformer) is not credited in the accident analysis. However, equipment performing or supporting safety functions is much more likely to be replaced with a temporary system during decommissioning than during the previous production mission. Rather than prescribing when various items may be replaced, AC 5.6.1.4 commits to notify DOE a least 7-calendar days prior to replacing any equipment performing or supporting safety functions. This allows the facility to more clearly define the status of the facility when each item is replaced and keeps DOE involved in the decommissioning process. The notification should include facility status at the time of the replacement, impact on safety functions, and technical justification for replacing the existing equipment with temporary equipment.

Issues that are significant enough to affect safe operations will challenge other TSR requirements. Therefore, there are no CONDITIONS, REQUIRED ACTIONS, or SURVEILLANCES associated with AC 5.6.1.4.

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5 ADMINISTRATIVE CONTROLS

5.7 Inadequate CAAS Annunciation

Implement Nuclear Criticality Safety Manual compensatory measures to permit access to areas with inadequate CAAS annunciation.

Applicability: This requirement is applicable to areas that do not meet CAAS annunciation requirements.

Actions:

Condition	Required Action	Completion Time
A. AC 5.7 requirements for inadequate CAAS annunciation are not met.	A.1 Correct the deficient CONDITION **OR** A.2 Conduct a controlled evacuation of the AFFECTED AREA. **OR** A.3 SUSPEND OPERATIONS in the 707/707A COMPLEX	IMMEDIATELY 2 hours IMMEDIATELY

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Surveillance Requirements:

None Required

5 ADMINISTRATIVE CONTROLS

Bases:

AC 5.7	Requirements for criticality notification hardware (i.e., LS/DW speakers, criticality beacons) and inadequate CAAS compensatory measures are covered by LCO 3.4. Compensatory measures that permit access to inadequate CAAS annunciation areas are covered by AC 5.7. AC 5.7 makes a commitment to requirements in the Nuclear Criticality Safety Manual for implementing compensatory measures to permit access to inadequate CAAS annunciation areas. The compensatory measures (e.g., Section 6.8.8.1 of the Nuclear Criticality Safety Manual) use alternate detectors or notification methods that are considered adequate to notify workers of a criticality. This requirement ensures that workers in the AFFECTED AREA have an approved method of notification and are prepared to respond (evacuate) if a criticality occurs.
ACTION A.1 and A.2 and A.3	If the LS/DW System does not meet audibility requirements and a criticality beacon is not visible, the CAAS cannot reliably notify workers of a criticality and inadequate CAAS annunciation is declared as part of LCO 3.4. REQUIRED ACTIONS associated with CONDITIONS E and F of LCO 3.4 are to implement the compensatory measures covered by AC 5.7 prior to re-entry into the AFFECTED AREA or prior to conduct of planned OUT-OF-TOLERANCE activities in the AFFECTED AREA. The CAAS annunciation capability may also be inadequate as part of a permanent CAAS audibility/visibility non-compliant configuration under the Exception to LCO 3.4. If it is DISCOVERED that the AC 5.7 required compensatory measures are not met by personnel in the AFFECTED AREA, the facility shall either correct the deficiency or conduct a controlled evacuation of the AFFECTED AREA or SUSPEND OPERATIONS in the 707/707A COMPLEX. If AC 5.7 requirements for the inadequate CAAS annunciation CONDITION are not met, ACTION A.1 requires IMMEDIATELY correcting the deficient CONDITION associated with the AC 5.7 requirements. Correcting the deficiency in a timely manner re-establishes compliance with AC 5.7. However, entry into CONDITION A must be managed in accordance with TSR 3.0.4.

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5 ADMINISTRATIVE CONTROLS

Bases:

ACTION A.1 and A.2 and A.3 (continued)

If AC 5.7 requirements for the inadequate CAAS annunciation CONDITION are not met, ACTION A.2 requires conducting a controlled evacuation, removing workers from areas where the CAAS annunciation capability is degraded. During or following evacuation of the AFFECTED AREA, if AC 5.7 compensatory measures are re-established, the evacuation requirement can be removed. The evacuation of the AFFECTED AREA ensures that personnel in the 707/707A COMPLEX are only located in areas where they can be informed that a criticality event is occurring if they do not have compensatory measures implemented. The 2-hour COMPLETION TIME was selected as a reasonable amount of time to notify workers in the AFFECTED AREA to place any work being conducted in the area in a safe configuration and then to exit the area.

If AC 5.7 requirements for the inadequate CAAS annunciation CONDITION are not met, ACTION A.3 requires SUSPENDING OPERATIONS in the 707/707A COMPLEX. As above, if AC 5.7 compensatory measures are re-established, the SUSPEND OPERATIONS action does not need to be performed. The REQUIRED ACTION to SUSPEND OPERATIONS ensures that activities that could lead to a criticality event are not performed while areas exist in the facility that do not have an OPERABLE CAAS. The adequacy of this REQUIRED ACTION must be based on a documented determination by Criticality Engineering that a criticality event is incredible while operations are suspended. The SUSPEND OPERATIONS action is expected to begin IMMEDIATELY following DISCOVERY of the CONDITION.

As stated in the BASES for LCO 3.4, implementation of AC 5.7 compensatory measures in the inadequate CAAS annunciation AFFECTED AREA does not exit the LCO 3.4 inadequate CAAS annunciation CONDITION requiring implementation of AC 5.7 compensatory measures. The CAAS is still in an OUT-OF-TOLERANCE in all cases, even though AC 5.7 compensatory measures allow entry into the AFFECTED AREA and conduct of operations. If AC 5.7 compensatory measures (other than postings) are not met, an AC 5.7 AC NONCOMPLIANCE exists, CONDITION A defines the REQUIRED ACTIONS to be taken, and a VIOLATION of LCO 3.4 does not occur.

For permanent inadequate CAAS annunciation areas, AC 5.7 provides all the requirements associated with the configuration. These permanently deficient AFFECTED AREAS do not represent an OUT-OF-TOLERANCE CONDITION under LCO 3.4 but are covered under an Exception to LCO 3.4. In this situation, the initial AFFECTED AREA posting requirements of LCO 3.4 are imposed as part of AC 5.7. Any deficiencies associated with the postings for permanently deficient AFFECTED AREAS are to be handled as an AC NONCOMPLIANCE and require entry into CONDITION A under AC 5.7.

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6 DESIGN FEATURES (DF)

This section contains DFs that implement requirements or assumptions in the accident analysis. DFs are passive SSCs that provide preventive or mitigative functions, and whose failure could adversely affect the health and safety of the public or workers. The accident scenarios were reviewed to identify assumptions or requirements and determine what factors need to be controlled. The passive features credited in the accident analyses are discussed below:

6.1 Periphery Confinement Barriers:

Periphery confinement barriers (e.g., walls, roof, doors, floors, and penetrations) work in conjunction with the ventilation system to contain radiological releases consistent with the building leak path factors used in the accident analyses. Periphery confinement concrete barriers provide shielding as DEFENSE-IN-DEPTH to reduce exposure to co-located workers from nuclear criticality accidents.

Applicability: This requirement is applicable at all times in Building 707/707A except as allowed in the exception statement. Periphery Confinement Barrier requirements may be discontinued in an AFFECTED AREA when the area is determined to be OPERATIONALLY CLEAN.

Exception: Fire rating deficiencies in periphery confinement barriers may be handled in accordance with AC 5.3.1.4.

6.2 Waste Container Integrity:

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Waste containers (e.g., IP-1 cargo, IP-2 metal crates, SWBs, 55-gallon drums, 10-gallon drums) contain radiological releases consistent with accident frequency and damage ratio assumptions in the accident analysis. Drum vents are credited with a reduction in frequency for hydrogen deflagration accidents.

Applicability: Waste Container Integrity DFs are applicable at all times for containerized waste.

Any process that might alter, modify, or affect the integrity of these DFs shall be evaluated for possible safety impact in accordance with the Unreviewed Safety Question Determination (USQD) process.

6 DESIGN FEATURES (DF)

ACTIONS:

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Building Structure or credited ducts degraded.	A.1 Suspend Hot Work in the AFFECTED AREA(s).	IMMEDIATELY
	AND	
	A.2 Implement controls from AC 5.3.1.4 in the AFFECTED AREA(s).	4 hours
	AND	30 days
	A.3 Restore the degraded Building Structure or credited ducts.	

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SRs:

None Required

6 DESIGN FEATURES (DF)

Bases:

DF 6.1 **Overview:**

The accident analysis considers "confinement" to be a building leakpath factor of 0.1. The following basic functions are required to maintain a building leakpath factor of 0.1:

a. Periphery confinement barriers (DF 6.1);
b. Confinement pressure differential (LCO 3.1.1); and
c. Confinement exhaust filtration (LCO 3.1.2).

Periphery confinement barriers (e.g., walls, roof, doors, and floors) work in conjunction with the ventilation system to contain radiological releases. Periphery confinement barriers provide the boundary for maintaining pressure differentials and must contain airborne contamination as credited in the accident analysis. The accident analysis does not credit the periphery confinement barriers with a specific fire rating. It assumes that combustible materials will not challenge the periphery confinement barriers. Therefore, combustible materials will be controlled in areas with fire rating deficiencies to keep from challenging the barrier. This process is allowed by the Exception which hands off to AC 5.3.1.4. Features included as part of periphery confinement barrier include structural integrity, fire resistance, and the ability to maintain pressure differentials. In addition, the periphery confinement concrete barriers provide shielding for areas with potential criticalities. The credited periphery confinement barriers are identified in the Building 707 Complex Fire Hazards Analysis (Ref. 6).

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Redundant, non-credited HEPA filters in exhaust ventilation filter plenums and filter units provide an additional passive confinement barrier. These additional filters provide another layer of defense-in-depth for the tested/credited filter stage that is part of the periphery confinement barrier. SCO Vestibules may be constructed outside the periphery confinement barriers. The vestibules may be made of various material (e.g., fire retardant plywood and plastic, corrugated metal, concrete block). Plastic and tape are generally used to form a seal between the SCO container and the vestibule. A door in the periphery barrier provides access to the vestibule for loading the waste containers. When the periphery barrier door is open, the vestibule and waste container (e.g., cargo container) form the periphery barrier and maintain the pressure differential. The periphery barrier door may be open for long periods of time while the containers are loaded.

6 DESIGN FEATURES (DF)

Bases: (continued)

DF 6.1 (continued)	**Applicable Areas:** Periphery Confinement Barriers must be maintained in Building 707/707A at all times until an AFFECTED AREA has been determined to be OPERATIONALLY CLEAN. Since the Periphery Confinement Barriers ensure that airborne contamination is channeled through the exhaust ventilation system and HEPA filters, the AFFECTED AREA would be any area with ventilation communication to areas that have removable contaminated waste. An interior wall could become the new Periphery Confinement Barrier to isolate airborne communication between areas if approved by FPE. Building 778 has no credited Periphery Confinement Barriers, therefore, material Management Controls of AC 5.2.1.1 must be followed.
DF 6.2	Waste containers are assumed to reduce the frequency of releases and the severity of releases that occur from analyzed accidents. The integrity of waste containers is a credited control in some accidents (i.e., drum vent maintains container integrity). The integrity of waste containers is an implicit assumption in other scenarios involving waste containers. There are no detailed specifications for container integrity in the accident analysis, but the credit given to waste container integrity can be determined through accident frequency damage ratios and release fractions used in the accident analysis. Any special features such as vents, seals, lid retainers, and liners can affect the integrity of the containers and are considered part of the waste container integrity. Damaged waste containers do not need to be evaluated if the waste is repackaged or the container is repaired in accordance with waste packaging requirements.
ACTIONS A.1, A.2, and A.3	A degraded Building Structure or credited duct is considered an opening or a set of openings if ≥ 160 cumulative square inches in area within a ten foot radius. This value is based on engineering judgment rather than analysis and is intended to represent a reasonable threshold of concern for openings in confinement barriers. This value does not include doors open for less than five minutes. The set of openings is intended to cover planned degradations involving multiple penetrations in the Building Structure associated with a single evolution. Multiple evolutions involving concurrent, planned degradations are not intended to be authorized, regardless of the size of the penetrations. The requirements of LCO 3.1.1 must continue to be met.

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ACTIONS A.1, A.2, and A.3 (continued)	If the Building Structure or a credited duct is planned to be degraded, the credited function will be unavailable to perform its intended function and REQUIRED ACTIONS A.1 and A.2 must be met prior degrading the function. If a degradation of the Building Structure or a credited duct is DISCOVERED, ACTION A.1 must be met IMMEDIATELY. The IMMEDIATE COMPLETION TIME is considered reasonable amount of time since Hot Work in the AFFECTED AREA(s) can be readily suspended. The AFFECTED AREAs for ACTION A.1 are those areas with air communication directly to the unfiltered leak-pathway. ACTION A.2 requires implementation of the controls of AC 5.3.1.4) in the AFFECTED AREA within 4-hours of DISCOVERY of a degraded CONDITION. The 4-hour COMPLETION TIME is considered reasonable since Hot Work has been suspended in accordance with REQUIRED ACTION A.1. ACTION A.3 requires that the DISCOVERED or intentionally degraded system be restored to its credited function within 30 days of being DISCOVERED or intentionally degraded. The 30 day COMPLETION TIME is considered a reasonable period of time as it places a limit on the duration the function is degraded yet it affords time to complete the activity requiring the planned degradation or to design a modification to restore a DISCOVERED CONDITION. However, the COMPLETION TIME should not be used as an operational convenience for any planned degradations and the restoration of the DESIGN FEATURE should be accomplished in a reasonable time period.

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7 REFERENCES

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6. FHA-707-002, *Building 707 Complex Fire Hazards Analysis*, Revision 5, RFETS, Golden, CO, July 2002.
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